RF/RMRS-97-100

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RECONNAISSANCE LEVEL CHARACTERIZATION PLAN FOR THE 886 CLUSTER DECOMMISSIONING PROJECT

Rocky Mountain Remediation Services, L.L.C.

November 13, 1997
Revision 0

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REVISION 0

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RECONNAISSANCE LEVEL CHARACTERIZATION PLAN FOR THE 886 CLUSTER DECOMMISSIONING PROJECT

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1.0 INTRODUCTION

The Building 886 Cluster (Figure 1-1) is comprised of buildings 886, 888A, 880, 875, and T886A and an underground tunnel with ventilation ducts that connect Building 886 to Building 875 (Figure 1-2). Because Building 886 and its associated facilities have no mission, the cluster is being decommissioned to reduce operating costs and to eliminate hazards within the Cluster's buildings. Consistent with the Rocky Flats Cleanup Agreement (RFCA) (DOE 1996), the 886 Cluster Decommissioning Project is being conducted as a Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) removal action. The 886 Cluster Decommissioning Project is one of the decommissioning activities at Rocky Flats Environmental Technology Site (RFETS) selected to meet the site's goal.

1.1 Purpose

The building disposition approach agreed upon in the RFCA Attachment 9 (DOE 1996) includes reconnaissance level characterization to support decommissioning planning and implementation. The purpose of this Reconnaissance Level Characterization Plan (RLCP) is to detail the data requirements and methodology for 886 Cluster characterization. The characterization efforts are intended to identify the type, quantity, condition, and location of radioactive and hazardous materials which are, or which may be, present as residual contamination in the 886 Cluster facilities. Implementation of the RCLP will establish a preliminary estimate of the type of contamination or safety hazards present in the 886 Cluster. Data generated during the characterization activities will be summarized in the Reconnaissance Level Characterization Report and will be used as input to the Interim Action/Interim Remedial Action Plan and Health and Safety Plan. Additional surveys, referred to as "in-process characterization," will be employed to characterize contamination, as well as physical safety hazards, throughout the disposition process.

1.2 Scope

Information and data presented in this plan specifically pertain to the Building 886 Cluster. The review of historical records and the collection of process knowledge information covers the operational time period for the facility from original construction to present. This information was evaluated to identify data needs for the characterization effort. The scope of this document is to present the characterization plan to fill the data needs identified. This document was prepared using guidance from Manual for Conducting Radiological Surveys in Support of License Termination NUREG/CR-5849, Decommissioning Handbook DOE/EM-0142P, Decommissioning Resource Manual and Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM) NUREG-1575, Guidance for Planning for Data Collection in Support of Environmental Decision Making Using the Data Quality Objectives Process, EPA QA/G-4 (EPA 199x) with procedural support from the Environmental Management Department Procedures Manual (EG&G 1992).

2.0 CLUSTER DESCRIPTION

The construction of Buildings 886, 875, and 888A was completed in 1964 and commissioned in 1965. The trailer T886A was located east of Building in approximately 1980; a breezeway connected the two at a later date. The construction date of Building 880 is unknown. The purpose of the 886 Cluster was to conduct criticality experiments on liquids, powder, and solid forms of fissionable materials. The date of he last criticality experiment was October

ACRONYMS

ADM	Administrative Procedures Manual
AHERA	Asbestos Hazard Emergency Act
APO	Analytical Projects Office
ASTM	American Society for Testing Materials
BIO	Basis of Interim Operation
CCR	Colorado Code of Regulations
CDPHE	Colorado Department of Public Health and Environment
CLP	Contract Laboratory Program
CML	Critical Mass Laboratory
COC	Contaminant of Concern
DOE	Department of Energy
EPA	Environmental Protection Agency
EMD	Environmental Management Department
FIDLER	Field Instrument for the Detection of Low Energy Radiation
FO	Field Operations (Manual)
HSP	Health and Safety Plan
LLW	Low-level Waste
PARCC	Precision, Accuracy, Representativeness, Completeness, and Comparability
PCBs	Polychlorinated biphenyls
ppm	Parts Per Million
QA	Quality Assurance
QC	Quality Control
RCA	Radioloigcal Control Area
RCLP	Reconnaissance Level Characterization Plan
RCRA	Resource Conservation and Recovery Act
REP	Radiological Engineering Procedure
RFCA	Rocky Flats Cleanup Agreement
RFEDS	Rocky Flats Environmental Database System
RFETS	Rocky Flats Environmental Technology Site
ROI	Radiological Operating Instruction
SOE	Stationary Operating Engineer
TCLP	Toxicity Characteristic Leaching Procedure
WAC	Waste Acceptance Criteria

BUILDING 886 AREA

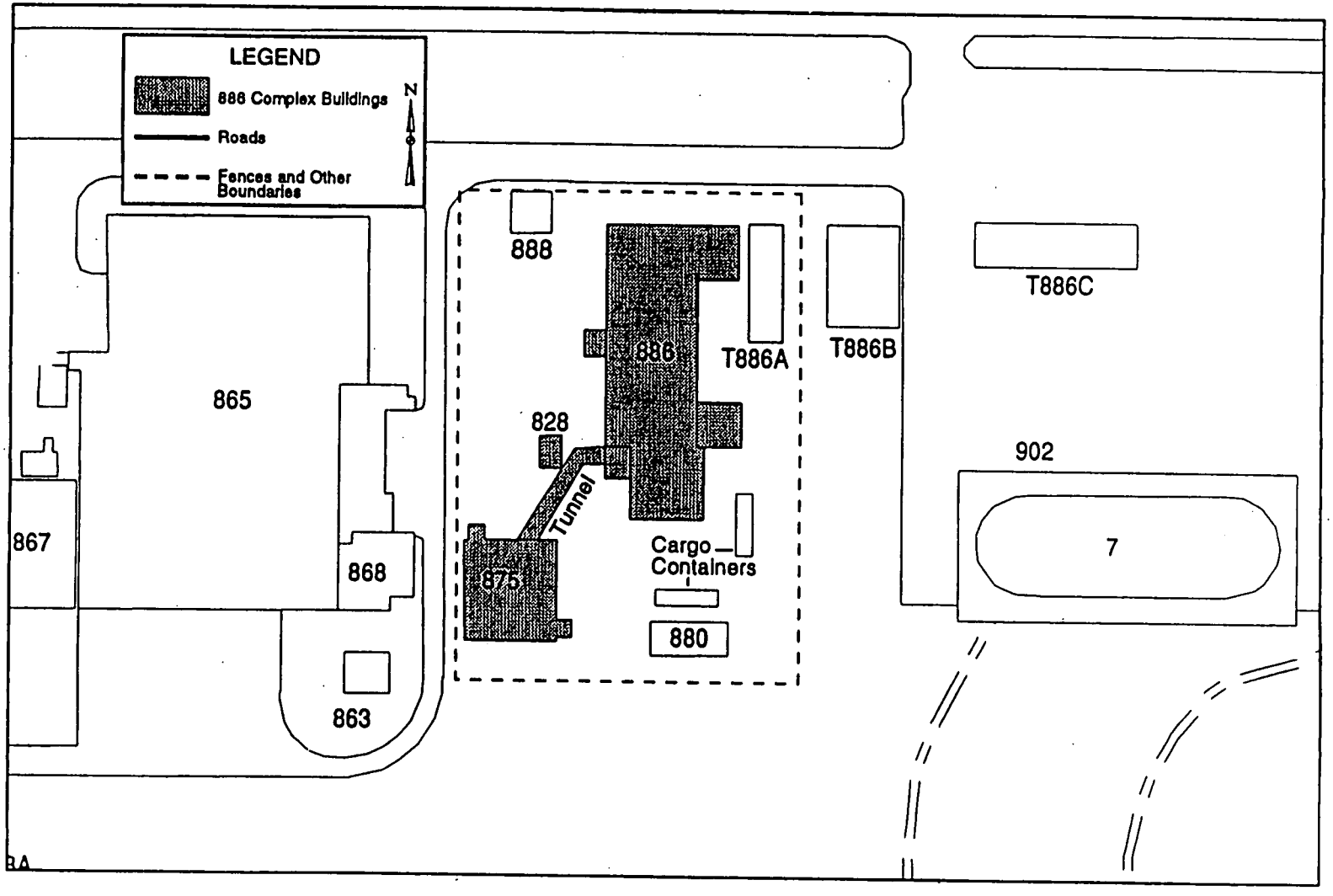


Figure 1-2. 886 Cluster

BUILDING 886 SITE LOCATION

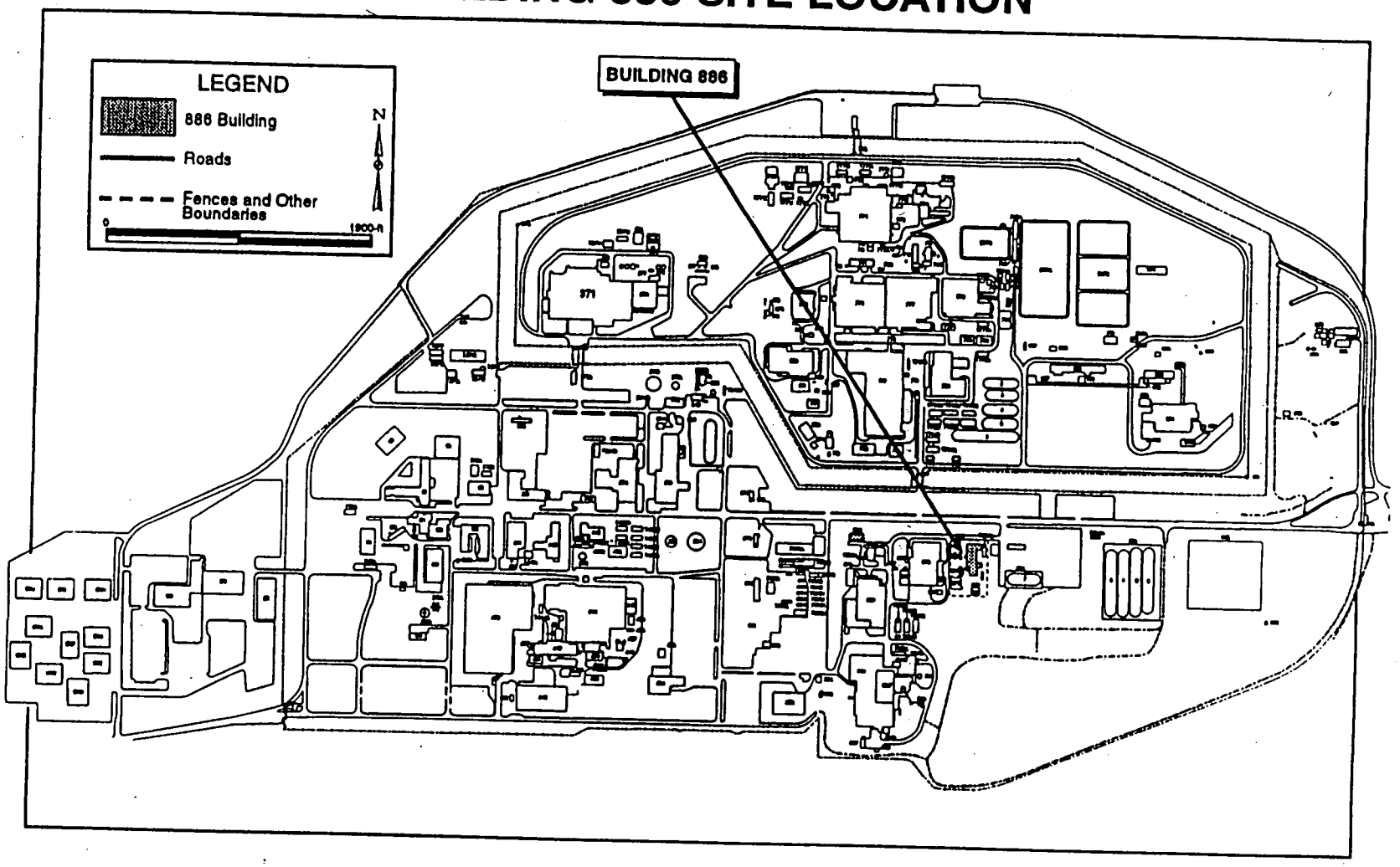


Figure 1-1. 886 Cluster Location at RFETS

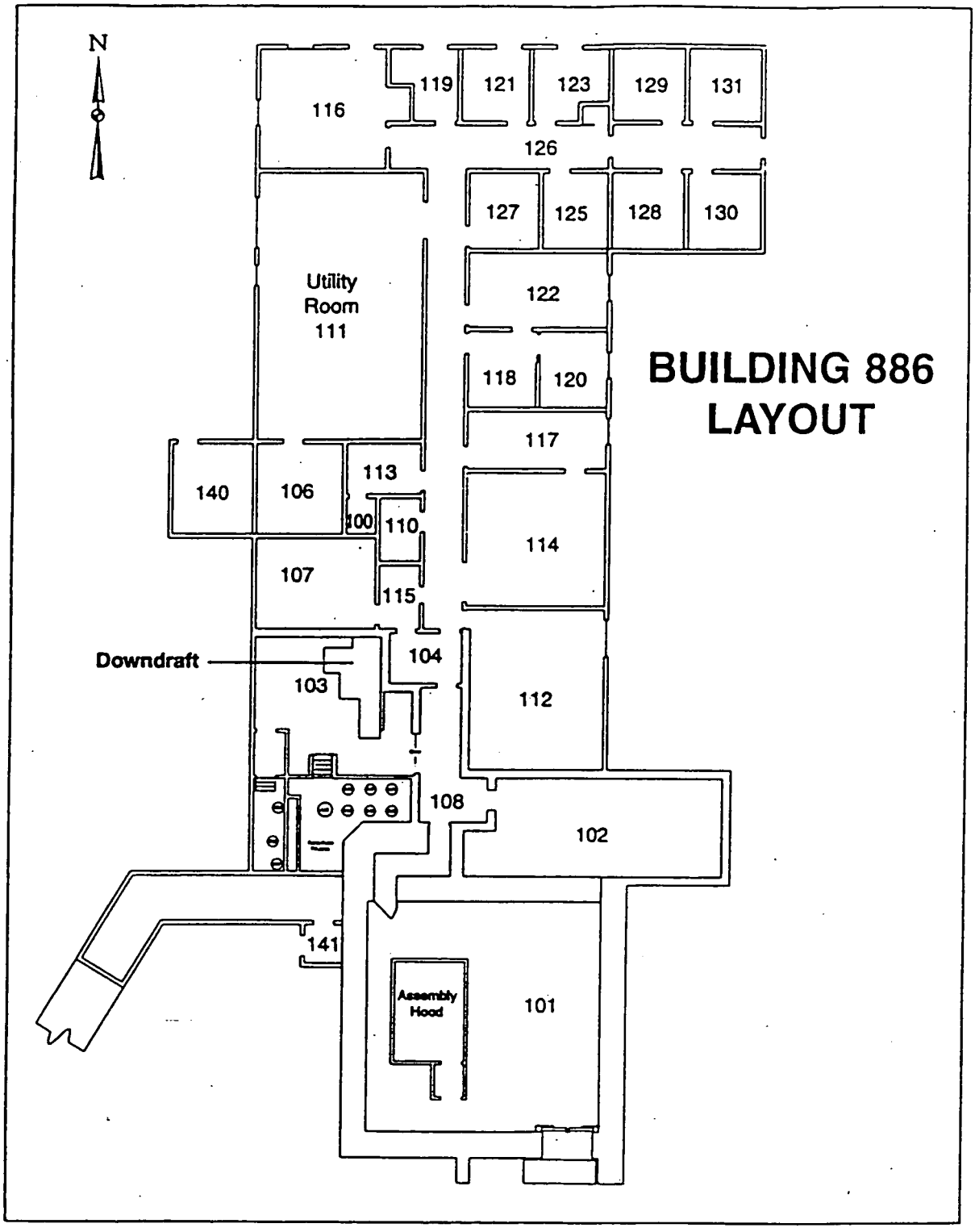


Figure 2-1. Building 886 Layout

1987. These experiments were essential to validate computer models used to establish nuclear criticality safety limits, now called Criticality Safety Operating Limits. A brief description of the operational purpose, waste streams suspected and/or generated from each building, and assessment of likely hazards in the 886 Cluster is presented in the following sections.

2.1 Building 886 - Critical Mass Laboratory

Building 886 contains the Critical Mass Laboratory (CML) where criticality experiments were performed (Figure 2-1). Three rooms and a hallway comprise the Radiation Control Area (RCA) which include and provide support facilities to the CML:

- Room 101 - the assembly room where all criticality experiments were performed;
- Room 102 - a storage vault for Special Nuclear Material (SNM);
- Room 103 - the mixing room which serves as a fissile solution storage area, and;
- Room 108 – the hallway within the CML connecting Rooms 101,102, and 103.

Outside of the RCA, Room 111 is the Utility Room and Room 112 is the Control Room. Room 141 is the Stationary Operating Engineer (SOE) control room. The remaining rooms within the building are considered office space.

2.1.1 Critical Mass Laboratory

As stated above, Room 101 was the assembly room for the CML. Fixed and removable contamination is present throughout the room. According to the Basis for Interim Operation (BIO) (KH 1995), exposed surfaces within Room 101 are contaminated with uranium-235 to less than 20 disintegration per minute (dpm) per 100 square centimeter (cm^2) for alpha contamination. There are highly enriched uranyl nitrate (HEUN) solution residues present as hold-up material in the piping in the assembly hood in Room 101. The assembly hood, also referred to as the "doghouse," is composed of stainless steel (unpainted) with a plexiglass window. The assembly hood is also internally contaminated with uranium due to solution leakage from the piping system. Approximately half of the room contains empty tanks, waste, and capitol equipment that will require characterization and/or dispositioning. The assembly hood area also contains four raschig ring tanks and capitol equipment. The raschig ring tanks are contaminated with HEUN residue. In addition, the room is extensively wired for controls and cameras. Based on process knowledge, the paint in the room is known to contain lead and the concrete contains asbestos.

Room 102 was the storage vault for SNM. The room is only slightly contaminated with uranium and has very limited piping. According to the BIO (KH 1995), exposed surfaces within Room 102 are contaminated with uranium-235 to less than 20 dpm per 100 cm^2 for alpha contamination. Based on process knowledge, the paint in the room is known to contain lead and the concrete contains asbestos. Recent removal of containers of low enriched uranium (LEU) oxides and two sources of Co-60 and one source of Cf-252 was completed as a risk reduction. Other source materials potentially present in Room 102 requiring disposition include: Am-241, Ba-133, Cd-109, Cs-137, Mn-54, Na-22, Pu-239, U-238 (KH 1995).

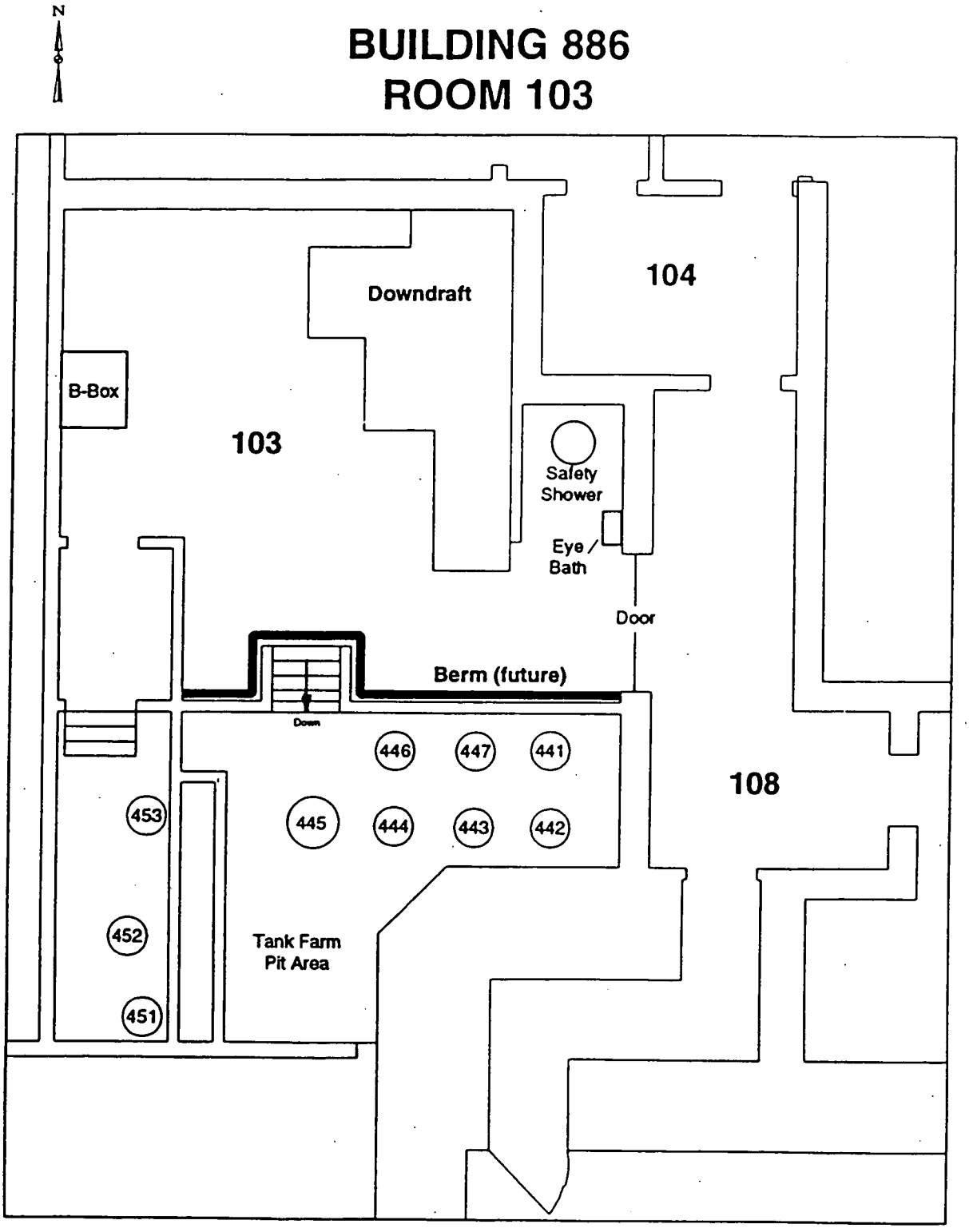


Figure 2-2. Building 886 Room 103

The mixing room, Room 103, contains 10 tanks internally contaminated with residual HEUN, three of which are within a stainless steel room within Room 103 (Figure 2-2). The piping connected to the tanks is similarly contaminated. The HEUN was drained from these tanks and raschig rings were removed as part of a risk reduction. As for Rooms 101 and 102, exposed surfaces within Room 102 are contaminated with uranium-235 to less than 20 dpm per 100 cm^2 for alpha contamination (KH 1995). The downdraft room and glovebox (i.e., the downdraft unit) is composed of stainless steel. The downdraft unit in Room 103 is believed to be internally contaminated with plutonium from the handling of plutonium metal for criticality experiments prior to 1983. Since then, the downdraft unit has been secured and has not been used. The degree of contamination is unknown, but it was estimated in the BIO to be less than two grams over all surfaces (KH 1995). It was also conservatively estimated that nine grams of plutonium are in the exhaust duct and in the first stage high efficiency particulate air (HEPA) filters; however, according to the BIO, studies have indicated that very little plutonium exists in the exhaust ductwork or in the HEPA filters (KH 1995). Results of paint samples on the exterior of the tanks indicated the presence of RCRA metals barium, cadmium, lead, and silver. Lead-based paint covers the walls, tanks, and piping. Capitol equipment within the room will require characterization and/or dispositioning.

Room 108 is the hall connecting Rooms 101, 102 and 103 which is assumed to be similarly contaminated with uranium-235. Surfaces are painted with lead-based paint and asbestos containing materials (ACM) are likely.

2.1.2 Room 111 - Utility Room

The utility room houses electrical support and building controls for 886. Paint samples collected by RFETS industrial hygiene personnel in 1996 from the west wall of Room 111 and on the exterior wall tested positive for lead and negative for asbestos. Friable ACM on piping and tanks have been previously identified (i.e., tagged) in Room 111.

2.1.3 Room 112 – Control Room

At present, Room 112 contains excess materials (non-chemical) and electronic equipment requiring dispositioning. ACM, such as the floor tile, are likely.

2.1.4 Room 141 – SOE Control Room

Room 141, the SOE Control Room for the CRL, houses electronic equipment requiring dispositioning. ACM, such as the floor tile, is likely.

2.1.5 Office area

Excluding the rooms discussed above, the remainder of Building 886 is comprised of office areas. Excess furniture and equipment is being dispositioned as appropriate as part of deactivation. There is a potential for ACM, such as floor and ceiling tile; however, two ceiling tiles in Room 128 (a hallway) were tested for asbestos in July of 1996 and asbestos was not detected. At present, carpeting covers the floors in many of the rooms.

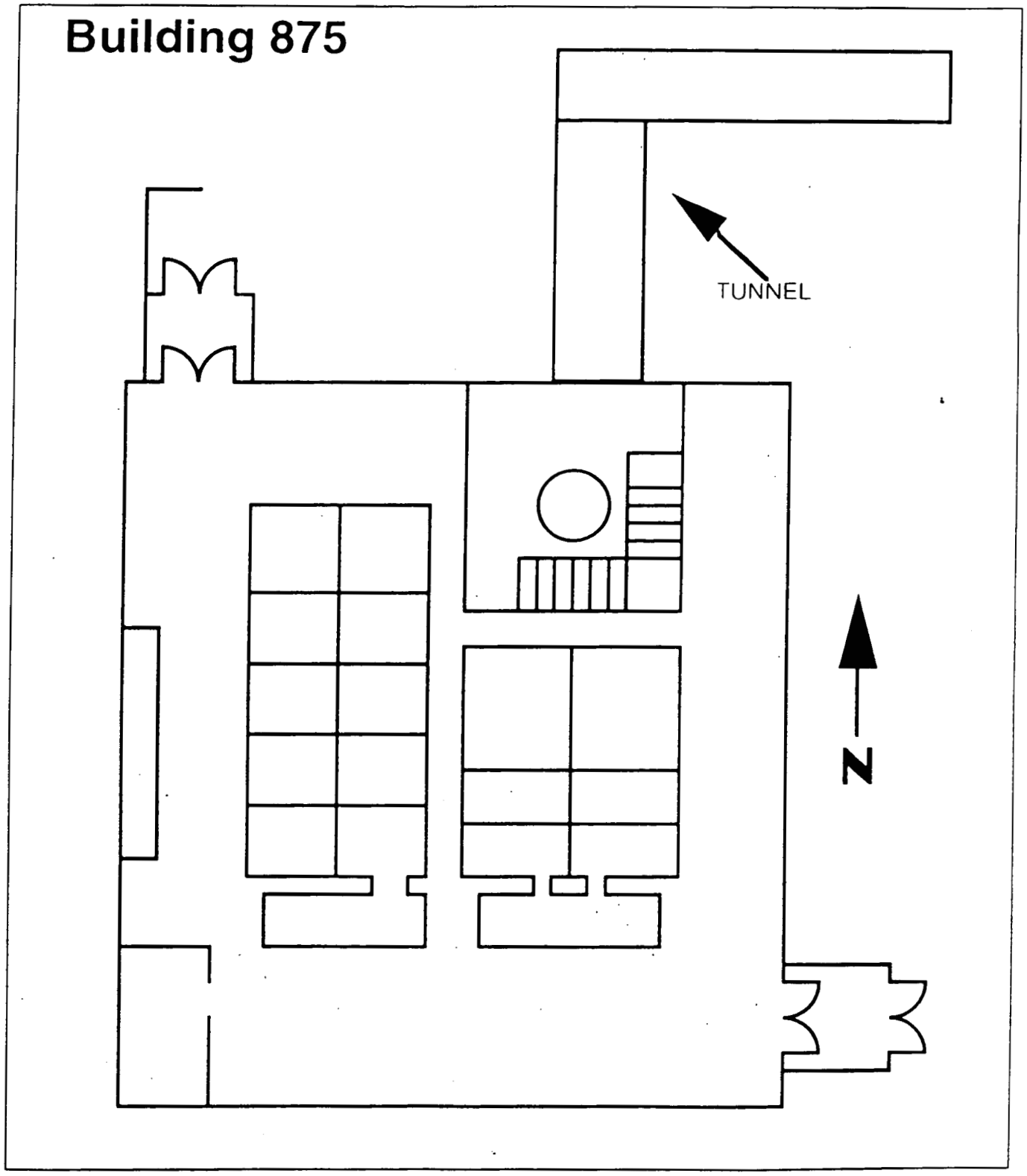


Figure 2-3. Building 875.

2.2 Building 875 - High Particulate Air Filter Plenum Facility

Building 875 houses the filter plenums that filter air which has been circulated through the Building 886 Exhaust System (Figure 2-3). The tunnel connecting these two facilities is considered part of this facility. The interior of the ductwork in the tunnel and the plenum are contaminated with enriched uranium. The potential exists for low-level plutonium contamination in the ducts and plenum chambers. Plenum 501 is a two-stage HEPA filter servicing the office area. Plenum 502 is a four-stage HEPA filter plenum servicing the MAA exhaust air. Tank D-501 is the plenum deluge tank. The building also contains a 1,200-gallon critically safe tank filled with raschig rings. ACM such as pipe insulation have been identified in the building. A metal cabinet containing sources is also in the facility. Groundwater seepage into the raschig ring tank area is routinely pumped out.

Drummed waste located in Building 875 has been packaged and radiologically surveyed and is presently awaiting shipment. Historical records indicate the following waste streams have been generated. Used HEPA filters, wet and dry combustibles, and used sprinkler heads are taken to the counter for assay. Maintenance generates wastes such as fluorescent bulbs, paint equipment, Kimwipes with grease, bearings, fan belt, lead acid batteries, and motors. Raschig rings are collected in 55-gallon drums as low-level waste. (RMRS 1993)

2.3 Building 888A - Electrical Substation

Building 888A is an electrical substation for the cluster buildings and operates at 13,800 volts. The transformer has been tagged indicating that polychlorinated biphenyls (PCBs) are not present. This transformer is shared with Building 875 and 888. (RMRS 1997)

2.4 Building T886A - Office Trailer

Building T886A is an office trailer and historically has only generated custodial and sanitary wastes.

2.5 Building 880 - Storage Facility

Building 880 is an unpainted, metal building currently being used for excess storage. While contaminated and hazardous materials and equipment are included in the current inventory, no materials are being moved in or out of the building. The majority of waste streams are considered, and will be packaged and handled as, low-level waste. Some of these items were, at one time, slightly contaminated with enriched uranium and packaged acceptably for the period. Waste lead and hazardous excess chemicals are present and accumulated in a regulated area. ACM may also be present in the storage facility. The facility may have incidentally become radiologically contaminated from items stored. Additionally, several items of used experimental equipment awaiting anticipated re-use are stored in the building. (RMRS 1993)

Table 2-1. SUMMARY OF PROCESS INFORMATION AND SUSPECTED CONTAMINANTS (COCs) BY ROOM/BUILDING IN THE 886 CLUSTER.

ROOM	DESCRIPTION	PROCESS INFORMATION	COCS
Not Applicable	886 Cluster-wide	Yellow safety paint (i.e., safety railings)	Lead/metals
Not Applicable	886 Cluster-wide	Red safety paint (i.e., fire systems)	Lead/metals
Bldg. 886			
101	Criticality Assembly Room	Process knowledge indicates the presence of fixed and removable radioactive contamination. Lead is assumed to be present in painted surfaces within the room per process knowledge. Asbestos is assumed to be present in the building materials (i.e., concrete structure, transite) per process knowledge and was noted as present on a large air mover during building walkthrough. Equipment in the room includes Horizontal Split Table (1) Vertical Split Table (1) Solution Base (1) Water Reflector Apparatus (1) Elevated Platform (1) Walk-in Hood (1) Concrete Reflector Panels Solution Transfer Pump (2) Material handling releases within the CML are noted in the BIO (KH 1995). Potential for PCBs or PCB-contaminated material was noted for cable sheathing, ARC welder, old ducting joints during building walkthrough. Unknown seepage under criticality experiment table noted during building walkthrough.	Radioactive Contamination Lead/metals, Asbestos, PCBs
102	SNM Storage Vault	Process knowledge indicates radioactive contamination from past operations; lead-based paint is known to have been used in the room, and; asbestos is known/suspected to have been used in the concrete structure. Material handling releases within the CML are noted in the BIO (KH 1995).	Radioactive Contamination Lead/metals, Asbestos
103	Mixing Room - Fissile material storage area (tank farm)	Process knowledge indicating radioactive contamination including Pu. Analytical results from 10 paint samples from the exterior of the tanks in the room indicate Pb concentrations from 879 to 4,400 ppm. The RCRA metals Ag, Cd, Ba were also present in the paint samples. Stainless Steel Tanks (11) Glovebox Type Enclosure (2) Solution Transfer Pump (4) Material handling releases within the CML are noted in the BIO (KH 1995). Specific to Room 103, a yellow slurry was observed in some of the sight gauges for the HEUN sollution tanks. It was estimated that the gauge had been in contact with the uranyl nitrate solution for 5 to 8 years. Flooding of the filter plenum 502 and duct with groundwater from the 828 pit is noted in the BIO. Water in the plenum deluge tanks was slightly contaminated with U. The high groundwater seeped into Room 103 pit which was filled with Raschig rings. Decontamination efforts in the 103 pit in summer of 1995 (KH 1995). Unidentified hydraulic fluid in pumps was noted during walkthrough.	Radioactive Contamination Lead/metals, Asbestos, PCBs
104	Stepoff Pad	None	Incidental Radioactive Contamination, Lead/ metals, Asbestos

2.6 Building 828

Building 828 is an outside concrete pit containing two-1,000 liter tanks filled with unused raschig rings. The pit and tanks have potentially been contaminated from groundwater seepage into the pits. The BIO also notes the potential for internal contamination with enriched uranium (KH 1995).

2.7 Contaminant Summary

Based on a review of the historical information associated with the 886 Cluster the following contaminants have been identified

2.7.1 Asbestos

A complete asbestos inspection of the building will be conducted in accordance with Colorado Department of Health and Environment (CDPHE) and Asbestos Hazard Emergency Act (AHERA) regulations by a certified State Inspector. Concrete used in the construction of Building 886 Rooms 101, 102, and 103 is known to contain asbestos.

2.7.2 Polychlorinated biphenyls

Sources of suspected polychlorinated biphenyls (PCBs) that could be encountered during decommissioning activities include fluorescent light ballasts and electrical equipment in the 886 buildings. The characterization will include an inventory of suspected PCB containing materials to estimate the type and quantity of these wastes.

2.7.3 Lead and Metals

It is assumed that the majority of painted surfaces associated with safety markings and fire protection systems contain lead. This assessment is based on previous sampling conducted by the Industrial Hygiene group and is documented in the Health and Safety Lead Abatement Plan files. As a result, these surfaces will not be sampled as part of the characterization.

2.7.4 Radionuclides

As discussed in Section 2, radioactive contamination is known to be in the 886 cluster based on past survey results; however, isotopic analyses have not been performed to characterize the nature of the radioactive contamination. Rooms 102 and 108 are not plutonium contaminated. Process knowledge indicates that with the exception of Room 103, where a plutonium container ruptured and release plutonium in both rooms and associated exhaust system, the radioactive contamination is assumed to be uranium. Plutonium is suspected to be present in Rooms 101 and 103.

Table 2-1. SUMMARY OF PROCESS INFORMATION AND SUSPECTED CONTAMINANTS (COCs) BY ROOM/BUILDING IN THE 886 CLUSTER (CONT).

122	Office Area	None	Incidental Radioactive Contamination, Lead/metals, Asbestos
123	Office Area	None	Incidental Radioactive Contamination, Lead/mefals, Asbestos
125	Office Area	None	Incidental Radioactive Contamination, Lead/metals, Asbestos
125A	Office Area	None	Incidental Radioactive Contamination, Lead/metals, Asbestos
125B	Office Area	None	Incidental Radioactive Contamination, Lead/metals, Asbestos
126	Hallway (Office Area)	None	Incidental Radioactive Contamination, Lead/metals, Asbestos
127	Office Area	None	Incidental Radioactive Contamination, Lead/metals, Asbestos
128	Office Area	Two asbestos samples collected from ceiling tile. Results indicated no asbestos detected.	Incidental Radioactive Contamination, Lead/metals, Asbestos
129	Office Area	None	Incidental Radioactive Contamination, Lead/metals, Asbestos
130	Office Area	None	Incidental Radioactive Contamination, Lead/metals, Asbestos
131	Office Area	None	Incidental Radioactive Contamination, Lead/metals, Asbestos
141	SOE Control Room	Control Panel	Incidental Radioactive Contamination, Lead/metals, Asbestos
140	Office Area	None	Incidental Radioactive Contamination, Lead/metals, Asbestos
Bldg 880	Storage	Metal storage shed used for excess equipment and, in the past, excess chemicals.	Incidental Radioactive Contamination
Bldg 875	HEPA Filter Plenum; raschig ring tanks	U and potential Pu contamination in the system. Flooding of the filter plenum 502 and duct with groundwater from the 828 pit is noted in the BIO. Water in the plenum deluge tanks was slightly contaminated with U (KH 1995). Tank filled with raschig rings in pit. Groundwater seepage into the pit area. Pipe insulation is asbestos containing	Radioactive Contamination, Lead/metals, Asbestos
Bldg T886A	Offices (in use)	None	Lead/metals, Asbestos
Bldg 888A	Electrical Substation	"No PCB" sticker on the transformer indicates past survey for PCBs with none detected.	None
Bldg 828	Pit Building	Two tanks used to stored unused raschig rings. Potential for internal contamination from groundwater entering the pit (0.07 mg/L uranium); potential pit contamination.	Radioactive contamination

Table 2-1. SUMMARY OF PROCESS INFORMATION AND SUSPECTED CONTAMINANTS (COCs) BY ROOM/BUILDING IN THE 886 CLUSTER (CONT).

105	Office	None	Incidental Radioactive Contamination, Lead/metals, Asbestos
106	Office Area	None	Incidental Radioactive Contamination, Lead/metals, Asbestos
107	Office Area	None	Incidental Radioactive Contamination, Lead/metals, Asbestos
108	Hallway within the CML	Process knowledge indicates low levels of radioactive contamination from activities conducted in Rooms 101, 102, and 103; lead paint; asbestos.	Radioactive Contamination, Lead/metals, Asbestos
109	Office Area	None	Incidental Radioactive Contamination, Lead/metals, Asbestos
110	Office Area	None	Incidental Radioactive Contamination, Lead/metals, Asbestos
111	Utility Room	Paint samples on the west interior and exterior walls indicate lead-based paint. Analyses for asbestos in these samples were negative. Equipment and electrical support to the building. Pipe insulation containing asbestos noted during building walkthrough..	Incidental Radioactive Contamination, Lead, Asbestos, PCBs potentially contained in equipment/equipment components
112	Control Room	Excess equipment; Reactor Control Console	Incidental Radioactive Contamination Lead/metals, Asbestos, PCBs potentially contained in equipment/equipment components
113	Office Area	None	Incidental Radioactive Contamination , Lead /metals, Asbestos
114	Office Area	None	Incidental Radioactive Contamination, Lead /metals, Asbestos
116	Office Area	None	Incidental Radioactive Contamination, Lead/metals, Asbestos
117	Office Area	None	Incidental Radioactive Contamination, Lead/metals, Asbestos
118	Office Area	None	Incidental Radioactive Contamination, Lead /metals, Asbestos
119	Office Area	None	Incidental Radioactive Contamination, Lead/metals, Asbestos
120	Office Area	None	Incidental Radioactive Contamination, Lead /metals, Asbestos
121	Office Area	None	Incidental Radioactive Contamination, Lead/metals, Asbestos

3.2 Identification of Decisions

Characterization data acquired through implementation of the RCLP will support the primary technical decisions as follows:

- What materials (e.g., paint, concrete, pipe insulation, etc), media (e.g., water, oil, solid, sludge, etc), or equipment within the facility are contaminated or, conversely, not contaminated?

- What are the generic classification categories by which the materials, equipment, and/or media will be managed, relative to an eventual assignment as contaminated (hazardous, radiological, or mixed) or not contaminated (nonhazardous)? In other words, what are the categories of waste streams that will result from the D&D of the 886 Cluster?

- What are the ultimate dispositions (i.e., waste classifications) of the waste streams, including quantities (e.g., a completed summary table)?

3.3 Identification of Inputs to the Decisions

Inputs to the decisions are COC-specific. Tolerable error of the parameters, relative to aspects such as detection limits, accuracy, and precision are also considered. Nonradionuclide data will initially be based on visual identification of materials, equipment, equipment components, or media and sampled according to the instructions presented in Section 4.0.

3.3.1 Asbestos

All surfacing materials and thermal insulation materials must be sampled for asbestos per 40 Code of Federal Regulations (CFR) 763.86. A minimum of three samples are required per homogeneous area greater than 6 linear feet (ft) and <1,000 ft^2 in dimension; 1 sample is required for areas <6 linear ft in dimension. Five samples are required per homogeneous areas between 1,000 ft^2 and 5,000 ft^2. Where homogeneous areas of >5000 ft^2 are encountered, 7 samples are required. Samples are randomly selected from the centers of a 3x3 ft square grid proportional to the size of the area. Grid spacing is only required for friable surfacing materials which may include drywall joint compound if suspected by the inspector

The presence of asbestos (i.e., >1% by volume) will be determined at an offsite, certified laboratory by Method EPA 600/R-93/116. Point counting is required when PLM results on friable asbestos range between 1% or less and more than 0%. All offsite laboratory contractual and quality specifications are under the auspices of the RFETS Analytical Projects Office (APO).

The generic categories of materials to be sampled are listed below:

- thermal systems (e.g., pipe insulation)
- surfacing materials (e.g., fireproofing, ceiling texture)
- miscellaneous (floor tiles, ceiling panels, concrete foundations and walls)

3.0 DATA QUALITY OBJECTIVES

Characterization objectives to be achieved by implementation of the RCLP are developed to specify the data collection requirements necessary to provide baseline information for use during decommissioning activities. The information obtained will be presented in a Reconnaissance Level Characterization Report (RLCR) for the 886 Cluster. The characterization efforts are intended to identify the type, quantity, condition, and location of radioactive and hazardous materials which are, or which may be, present as residual contamination in the 886 Cluster facilities. Implementation of the RCLP will establish a preliminary estimate of the type of contamination or safety hazards present in the 886 Cluster. Data generated during the characterization activities will be summarized in the RCLR.

The purpose of defining and implementing data quality objectives (DQOs) is to optimize the quantity and types of samples necessary to make project decisions relative to the charcterization objectives and to support the identification and disposition of contaminated media/materials generated by the decommissioning activities. Decisions based on sound data and defensible rationale will ensure the project's success. Optimization of samples through the DQO approach is achieved by minimizing the quantity of samples and thus minimizing related project costs while simultaneously establishing adequate confidence in the project's technical decisions. This approach to the definition and implementation of DQOs is consistent with that promulgated by the Environmental Protection Agency (EPA) (G-4, 1994). Additionally, the use of DQOs for the purposes stated is consistent with Department of Energy (DOE) guidance relative to facility decontamination and decommissioning (D&D) work (DOE, 1994).

With the exception of radionuclides, the DQOs for all of the contaminants of concern (COCs) are balanced with qualitative and quantitative techniques. DQOs for radionuclide characterization will be statistically based using the historical data from the facilities of interest. Calculated means and variances from the historical data are used to determine the optimum number of samples needed for comparison with current action levels (i.e., to determine whether media is contaminated or not).

The first of several components of the DQO process is the same for the nonradionuclide COCs (i.e, asbestos, lead, and PCBs). The radionuclide sampling strategy will be addressed separately based on the discussion above. For the nonradionuclide contaminants, differences in the DQOs result from differences in contaminant-specific action levels, development of decision rules, and limits on decision errors. Finally, the DQOs are intended to provide a detailed basis by which data are acquired and used in compliance with applicable state and federal regulations applicable to the contaminants of concern.

3.1 Statement of the Problem

Implementation of the DOE's decommissioning strategy for site buildings and infrastructure requires identification and disposition of contaminated media, materials, and equipment that are produced in the process, specifically relative to free release of materials or management as a particular type of waste. Adequate samples must be taken to properly characterize and manage the materials and equipment produced from the decommissioning process, waste or not. For this project, based on historical process knowledge of the 886 Cluster, the potential COCs are asbestos, PCBs, lead/metals, and radionuclides.

block wall. A minimum of 200 grams (g) of bulk sample is needed for performance of the TCLP procedure. Material will not be cored in excess of 2 inches into the material being sampled.

Based on a regulatory threshold of 5 ppm for leachate of lead-contaminated media , Methods SW1311 followed by SW6010A will be used for determining lead and metals concentration. Samples must be analyzed for all metals necessary to determine whether the material has hazardous waste characteristics (except for mercury, which has been eliminated based on process knowledge). The metals of concern, and associated regulatory thesholds for the leachate, are as follow:

METAL	Regulatory Level (mg/L, TCLP)
Arsenic	5.0
Barium	100.0
Cadmium	1.0
Chromium	5.0
Lead	5.0
Selenium	1.0
Silver	5.0

For fixed laboratory analysis, lead and metals concentrations will be determined by method SW6010A. Quality control requirements of fixed laboratory results are under the auspices of the RFETS APO.

Based on the sampling results and the bulk materials represented, the quantities and types (Appendix B) of lead- and metals-containing materials will be estimated for subsequent waste management purposes.

3.3.4 Radionuclides

Exisiing data from previous radiological surveys is discussed in Section 3.6.

3.4 Definition of Project Boundaries

The characterization boundaries are limited to the spatial confines of the Building 886 Cluster itself and materials, equipment, equipment components, and media that make-up or are within the buildings (interior and exterior). Environmental media, such as contaminated soils or groundwater, are not within the scope of this project.

Based on the sampling results and the bulk materials represented by the samples, the quantities of friable and nonfriable ACM will be estimated for subsequent abatement and waste management purposes.

3.3.2 Polychlorinated Biphenyls (PCBs)

A minimum of one sample will be acquired per homogeneous material/media type at a unique location. To assess material/media against the regulatory threshold of 50 parts per million (ppm) PCB-contaminated media (40 CFR 761.125) a laboratory method will be used to quantify PCB concentrations. A practical quantitation limit (i.e., reporting limit) of <5 ppm (1 order of magnitude less than the regulatory action level) will be required.

The following media shall be sampled for PCBs if encountered and if a sample can be obtained without dismantling the suspect equipment/equipment components :

- transformers
- capacitors
- flourescent light ballasts
- gaskets in potential PCB-containing systems (e.g., HVAC)
- electrical wiring
- paints

Oils will be sampled if encountered during RCLP implementation. Additionally, suspected spill sites on nonporous media shall be sampled with swipes. The sample area shall consist of 100cm^2, based on use of a template overlay used with the swipe (40 CFR 761.125). The samples will be analyzed offiste by method SW8081. Quality control requirements of fixed laboratory results are under the auspices of the RFETS APO.

3.3.3 Lead and Metals

All materials, equipment, or media suspected of containing lead and/or other RCRA metals (e.g., construction materials) or having lead coating will be sampled. A minimum of three samples will be acquired per homogeneous material/media type throughout the entire 886 Cluster. Analogous to asbestos sampling, areas less than six linear ft in their longest dimension need only one sample taken. Generic types of potential lead-containing materials include the following:

- paints, categorized by color, texture, and luster
- gloveboxes and associated shielding equipment
- piping
- plates/bars/brackets/shields
- lead fills in walls
- skirting
- additives (e.g., in plaster)

Samples shall be collected and submitted for analysis in bulk form (i.e., in a form and cumulative composition most representative of the anticipated form of waste stream). For example, samples for metals in paint on wall constructed with cinder blocks shall contain both the surficial paint layer(s) and a portion of the associated cinder

4.0 SAMPLING AND ANALYSIS

The sampling and analysis methods for each type of sample event to be performed under this RCLP were selected to be consistent with the DQOs presented in Section 3.0. If conditions are encountered during characterization which make the use of a sampling technique unsafe or inappropriate for the task at hand, the specified procedures may be modified or replaced as long as the modification or replacement procedure is justified and detailed in the sampling records and the resulting data is comparable and adequate to meet the objectives of the project.

An overview of the sampling and analysis is presented in this section along with a discussion sample handling, equipment decontamination, personal protective equipment (PPE) evaluation, quality control sampling, and sample designation. Detailed sampling instructions and referenced procedures are included as appendices to this plan and are referenced in the following sections as appropriate.

4.1 Asbestos

A complete asbestos inspection of the 886 Cluster will be completed in accordance with the Colorado Code of Regulations and Asbestos Hazard Emergency Response Act (40 CFR 763) by a state certified inspector. Sampling, as deemed appropriate by the inspector, will comply with Colorado Regulation 8 and 40 CFR 763 requirements. The sampling and analysis requirements are appended to the RCLP as Appendix A.

4.2 PCBs

All areas of facilities or buildings do not have the same potential for PCB contamination. Specific building materials, equipment, equipment components, or media suspected of being a source of PCBs and/or PCB-contaminated will be identified as part of characterization. Identification includes classification of affected areas (i.e., areas that contain suspect building materials, equipment, equipment components, or media) and unaffected areas. Affected areas will be subsequently characterized using the instructions contained in Appendix B. Additionally, during the characterization activities, any areas, equipment, equipment components or media suspected of being a source of PCBs and /or PCB-contaminated which were not previously identified will be included in the characterization at that time.

As summarized in Section 3.3.2, the following media shall be sampled for PCBs if encountered and if a sample can be obtained without dismantling the suspect equipment/equipment components :

- transformers
- capacitors
- flourescent light ballasts
- gaskets in potential PCB-containing systems (e.g., HVAC)
- electrical wiring
- paints

3.5 Development of Decision Rules

3.5.1 Asbestos

If any one sample of a sample set representing a homogeneous medium (described in Section 3.3.1) results in a positive detection (i.e., >1% by volume), the material is considered ACM; otherwise the material is not ACM.

3.5.2 PCBs

For any sample that exceeds 50 ppm, the associated medium will be considered TSCA waste; otherwise it is nonhazardous waste.

3.5.3 Lead and Metals

For any sample that exceeds the toxicity characteristic thresholds listed, the associated medium will be considered TSCA/RCRA waste; otherwise it is nonhazardous waste.

3.5.4 Radionuclides

If any measurement from the radionuclide exceeds the thresholds provided in Table 2-2 of the RFETS Radiological Control Manual, the related area or volume of material is considered radioactively contaminated.

3.6 Limits on Decision Errors

Derivation of a 95% Upper Confidence Limit (UCL) on the mean values will be performed for homogeneous media where random samples are collected as part of RCLP implementation.

Existing survey data were not available for RCLP preparation for all of the rooms and/or buildings identified in Table 2-1. However, based on the review of historic radiological survey data, the radiological status of the facility is well characterized. In addition, the building is not through deactivation. These deactivation activities (such as size reduction and removal of radiologically contaminated materials and equipment) would jeopardize the characterization surveys. Additionally, because of the excess equipment noted in some of the rooms and/or buildings access to all potential survey points is not possible. As this facility is undergoing baseline activities, the data collected will be incorporated into the RCL Report.

3.7 Optimization of the Sampling Design

Acquisition of a sample directly depends on the sampling team's observations of the material, equipment, equipment components, or media of interest. If data gaps are identified subsequent to the characterization sampling and decisions described herein (i.e., the decision can not be made with confidence), additional sampling of source materials and/or waste streams will be conducted.

(legibly sign and date) each hardcopy completed by the originator. Any modifications will be lined-through, initialed, and dated by the reviewer (in ink). The locations of samples must be diagrammed on schematics that illustrate the building, infrastructure, or layout of interest. The schematics shall include all detail associated with the sample location, e.g., sampling grid pattern, dimensions, random numbers assigned, and actual numbers chosen for final sample locations.

4.7 PPE Evaluation

Anti-contamination clothing will be worn in areas of known radiological contamination, as appropriate. PPE such as tyvek will be necessary for asbestos, PCB, and lead/metals surveys. PPE generated from this project (i.e., PPE worn for asbestos surveys in radiological contamination areas) will be evaluated with respect to potential chemical and radiological contamination. It is anticipated that spent PPE generated during the project will be disposed at the on-site landfill as non-hazardous, non-radioactive solid waste. Some decontamination of PPE may be required prior to disposal. All spent PPE will be surveyed prior to removal from the characterization area. If radiological contamination is detected above release requirements, or if the PPE appears to be stained and/or heavily soiled, the PPE will be decontaminated so that it no longer contains significant soiling, staining or contamination.

To meet the conditions of unrestricted release, the PPE must:

- Be free of appreciable staining and/or heavy soiling to address chemical concerns,
- Meet the requirements for unrestricted release in procedure 4-S23-ROI-03.02, *Radiological Requirements for Unrestricted Release,* and the evaluation criteria specified in procedure 4-Q97-REP-1003, *Radiological Evaluation for Unrestricted Release of Property/Waste* (Appendix F).

PPE that cannot meet these requirements will be evaluated on a case by case basis, including the probable disposition (off-site), and the collection of appropriate samples to support disposition. PPE evaluations will be documented in the field records.

4.8 QC Samples

QC samples will be collected as part of the characterization at a frequency of 1 in 20 samples. The following types of QC samples will be collected to support the characterization:

Duplicates: Duplicate (collocated) samples will be collected in the same manner and analyzed by the same analytical methods, in the same laboratory as the regular samples. These samples will be submitted blind to the laboratory. All duplicate samples will be collected using the same sampling equipment used for collection of the regular samples. Sampling equipment will be decontaminated while collecting regular and QC samples from the same location.

Equipment rinsate blanks: These samples will be prepared by collecting distilled water, poured over decontaminated sampling equipment, between collection of regular samples and collected only when re-usable sampling equipment is used. These blanks will be containerized, handled and preserved as water samples identified in Appendix D and submitted with the regular samples.

Oils will be sampled if encountered during RCLP implementation: Additionally, suspected spill sites on nonporous media shall be sampled with swipes. PCB concentrations will be determined by a fixed laboratory by method SW8081. The sampling and analysis requirements are appended to the RCLP as Appendix B.

4.3 Lead and Metals

All materials, equipment, or media suspected of containing lead and/or other RCRA metals (e.g., construction materials) or having coating (i.e, paint) suspected of containing lead and/or other RCRA metals will be sampled. As stated in Section 3.3.3, generic types of potential lead-/metal-containing materials include the following:

- paints, categorized by color, texture, and luster
- gloveboxes and associated shielding equipment
- piping
- plates/bars/brackets/shields
- lead fills in walls
- skirting
- additives (e.g., in plaster)

Bulk samples will be collected by the coring technique described in American Society for Testing and Materials (ASTM) Method E 1729-95. Coring will not penetrate any surface greater than 2 inches. This technique is consistent with the DQOs as described in Section 3.3.3 to provide a sample in a form and cumulative composition most representative of the anticipated form of waste stream. A minimum of 200 grams of bulk sample is required. The lead and metals samples will be analyzed by method SW6010A. The sampling and analysis requirements are appended to the RCLP as Appendix C.

4.4 Radiological

Existing data from radiological surveys is discussed in Section 3.6.

4.5 Sample Handling and Equipment Decontamination Procedures

Samples collected for laboratory analysis will follow *Environmental Management Department (EMD) Operating Procedures Volume I, Field Operations 5-21000-OPS-FO.13, Containerization, Preserving, Handling, and Shipping of Soil and Water Samples* (Appendix D). When reusable sampling equipment is used, the equipment will be decontaminated in accordance with EMD Operating Procedure 5-21000-OPS-FO.03, *General Equipment Decontamination, Section 5.3, Cleaning Procedures for Stainless Steel or Metal Sampling Equipment* (Appendix E).

4.6 Documentation

Data shall be documented on the forms developed for this project, and in accordance with the *Environmental Management Department (EMD) Operating Procedures Volume I, Field Operations 5-21000-OPS-FO.13, Containerization, Preserving, Handling, and Shipping of Soil and Water Samples* (Appendix D). The originator will authenticate (legibly sign and date) each completed hardcopy of the data. A peer reviewer, someone other than the originator, will perform a peer review on each hardcopy of data. The peer reviewer will authenticate

5.5 Change Control

Design activities are conducted in accordance with the Sites Configuration Change Control Program and the Integrated Work Control Programs ,1-454000-CSM-001. Activities are also conducted in accordance with the RMRS Conduct of Engineering Manual.

5.6 Procurement

Procurement activities are conducted in accordance the site, 1-W36-APR-111, Acquisition Procedure for Requisitioning Commodities and Services and the RMRS QAPD.

5.7 Inspection and Acceptance Testing

Inspection and Acceptance Testing is conducted in accordance with 1-D23-QAP-10.02, Inspection 1-31000-COOP 019, Returning Systems and Equipment to Service, 1-V51-COEM-DES-210, Design Process Requirements and 1-I97-ADM-12.01, Control of Measuring and Test Equipment.

5.8 Management Assessments

Management Assessments are conducted in accordance with the RMRS QA 9.01, RMRS Management Assessments.

5.9 Independent Assessments

RMRS Independent Assessments are conducted in accordance with RMRS-QA-10.01, Independent Assessment and RMRS WI-QA-10.01, Conduct of Surveillances.

6.0 PROJECT ORGANIZATION

The organizational structure for the project is illustrated in Figure 6-1. The Project Manager is responsible for ensuring that all data are collected, verified, transmitted and stored in a manner consistent with relevant operating procedures. The Project Manager, or designee, will obtain from the RFEDS, sample numbers and location codes. The characterization crew personnel will be responsible for data collection. Data management tasks will include completing all appropriate data management forms and completing the chain-of-custody form. The sample crew will coordinate sample shipment with APO personnel. The Sample Coordinator is responsible for verifying that the chains-of-custody are complete and accurate before the samples are shipped to the laboratory.

4.9 Sample Designation

Each sample will be assigned a unique identification number at the time of sample collection. The sample identification number will be documented on the records included in Appendices A, B, and C.

5.0 QUALITY ASSURANCE

Analytical data collected in support of the 886 Cluster RCLP will be evaluated using the guidance established by the Rocky Flats Administrative Procedure 2-G32-ER-ADM-08.02, *Evaluation of ERM Data for Usability in Final Reports*. This procedure establishes the guidelines for evaluating analytical data with respect to precision, accuracy, representativeness, completeness, and comparability (PARCC) parameters. Data validation will be performed according to the RFETS APO, Analytical Services Performance Assurance Group procedures, but will be done after the data is used for its intended purpose. Analytical laboratories supporting this task have all passed regular laboratory audits by the APO.

5.1 Quality Assurance Program

The RMRS Quality Assurance Program describes how RMRS implements the requirements of 10 CFR 830.120 through the RFETS site QA Program. The 886 Cluster organizational responsibilities are identified in Section 6.0.

5.2 Training Requirements

Training requirements for the 886 Cluster Decommissioning are defined in the Building 886 Training Implementation Matrix. Additional training identified during the reconnaissance level characterization will be documented through 1-31000-COOP-01 required reading Conduct of Operations and 1-31000-COOP 011, Pre-evolution Briefing.

5.3 Corrective Action

The site Corrective Action Process (CAP) and the RMRS QA-3.1, Corrective Action procedure and the occurrence reporting systems are utilized to handle items, services and processes not conforming to established requirements.

5.4 Document Control

All documents are prepared, reviewed and approved in accordance with RMRS DC-06.01, Document Control Program. Since this activity is considered a CERCLA removal action, all AR records generated shall be identified, handled and submitted in accordance with the RMRS Administrative Record Document Identification and Transmittal (RM 06.04) procedure. All non AR records shall be handled in accordance with the RMRS Records Identification , Generation and Transmittal, RM-06.02. procedure.

All activities described in the RLCP for the 886 Cluster Decommissioning Project are conducted in accordance with approved and controlled instructions and procedures identified in appendices A-G of the RLCP.

7.0 REFERENCES

DOE 1994. *Decommissioning Handbook* DOE/EM-0142P

EPA 1994. *Guidance for Planning for Data Collection in Support of Environmental Decision Making Using the Data Quality Objectives Process*, EPA QA/G-4

NUREG/CR-5849. *Manual for Conducting Radiological Surveys in Support of License Termination* NUREG/CR-5849

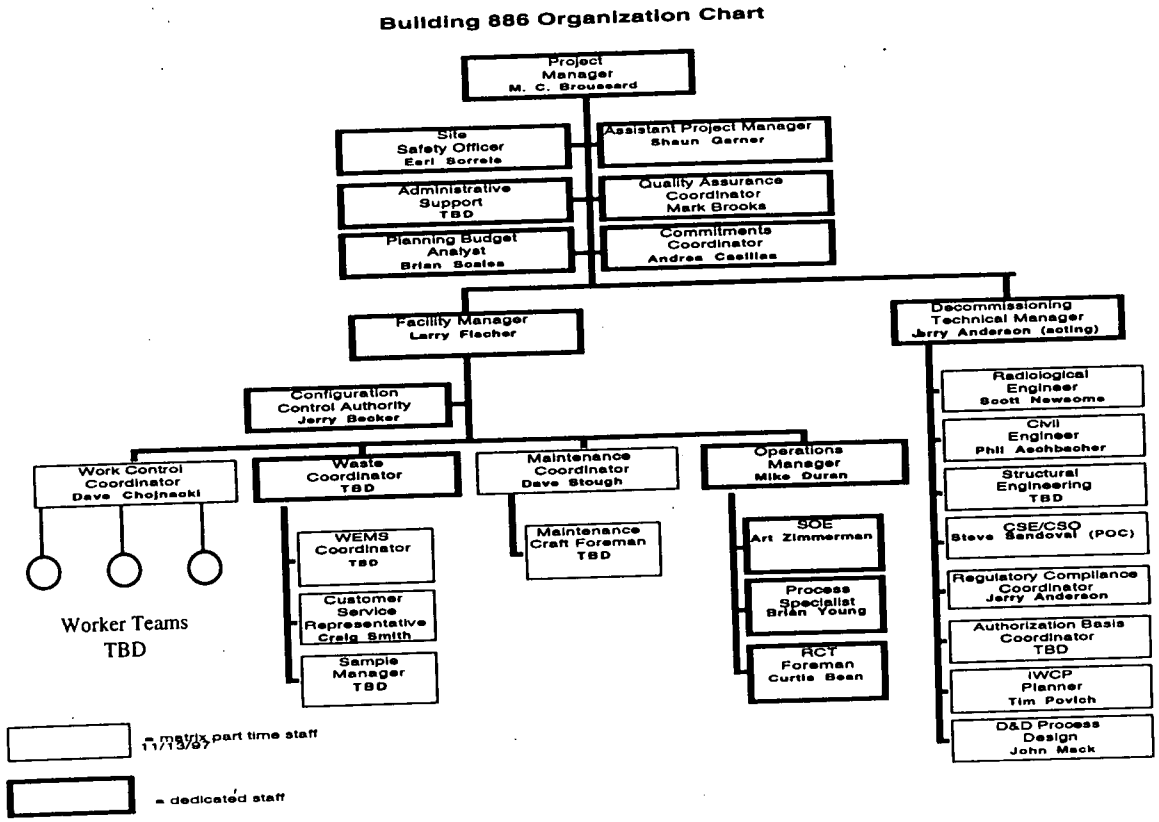
NUREG-1575. *Decommissioning Resource Manual and Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM)* NUREG-1575

RMRS 1993. Waste Residue Identification and Characterization, Building 875.

RMRS 1997. Plan for Decontamination and Decommissioning of Cluster 886. January.

KH 1995. Basis for Interim Operation, Building 886. October.

Figure 6-1. Organizational Chart



6. Renovation and Demolition Projects

Prior to any renovation or demolition in any public or commercial building which may disturb 50 linear feet of material on pipes, 32 square feet of material on other surfaces, or the volume equivalent of one 55-gallon drum of material identified by the EPA as a suspect asbestos-containing material, the facility component(s) to be affected by the renovation or demolition shall have an inspection performed by a building inspector certified under these regulations. The inspection must be performed to the AHERA standards as given in 40 CFR Part 763 (1992).

Any asbestos-containing material that is friable or will be made friable during demolition activities must be removed prior to demolition.

7. Measuring Asbestos Levels

a. Clearing Abatement Projects

This section applies only to non-school buildings in public access areas where the amount of asbestos-containing material which has been abated is greater than 50 linear feet on pipes, 32 square feet on other surfaces, or the volume equivalent of one 55-gallon drum. For clearance requirements in school buildings, see paragraph IV.G.9. (Completion of Response Actions). The General Abatement Certificate holder or building owner shall ensure that all abatement projects are completed as described below.

(i) At the conclusion of any abatement action and with only critical barriers still in place, an air monitoring specialist, who is independent of the contractor, shall visually inspect each work area where such action was conducted, and behind the critical barriers, to determine whether all dust and debris has been removed. If any such dust or debris is found, the area shall be recleaned until no dust or debris is found. If a critical barrier is removed for cleaning purposes, the area behind the critical barrier shall be cleaned and the critical barrier immediately replaced. Once the area has passed a final visual inspection and no dust or debris has been found, the air monitoring specialist shall collect air samples as follows:

(A) The air monitoring specialist shall collect air samples using aggressive sampling as described in 40 CFR Part 763 Appendix A (EPA)(1987) to monitor air for clearance after each abatement project; except that fans and leaf blowers shall not be directed toward any known friable ACM remaining in the work area.

(B) The General Abatement Certificate holder or building owner shall have the air samples collected under this paragraph 7. analyzed for asbestos, using laboratories accredited by the National Bureau of Standards to conduct such analysis using transmission electron microscopy (TEM) or, under circumstances permitted in this paragraph 7., laboratories showing successful participation in the American Industrial Hygiene Association Proficiency Analytical Testing (PAT) Program for phase contrast microscopy (PCM).

troweled-on, or otherwise applied to surfaces, such as acoustical plaster on ceilings and fireproofing materials on structural members, or other materials on surfaces for acoustical, fireproofing, or other purposes.

Thermal system insulation means material in a school building applied to pipes, fittings, boilers, breeching, tanks, ducts, or other interior structural components to prevent heat loss or gain, or water condensation, or for other purposes.

Thermal system insulation ACM means thermal system insulation that is ACM.

Vibration means the periodic motion of friable ACBM which may result in the release of asbestos fibers.

§ 763.84 General local education agency responsibilities.

Each local education agency shall:

(a) Ensure that the activities of any persons who perform inspections, reinspections, and periodic surveillance, develop and update management plans, and develop and implement response actions, including operations and maintenance, are carried out in accordance with subpart E of this part.

(b) Ensure that all custodial and maintenance employees are properly trained as required by this subpart E and other applicable Federal and/or State regulations (e.g., the Occupational Safety and Health Administration asbestos standard for construction, the EPA worker protection rule, or applicable State regulations).

(c) Ensure that workers and building occupants, or their legal guardians, are informed at least once each school year about inspections, response actions, and post-response action activities, including periodic reinspection and surveillance activities that are planned or in progress.

(d) Ensure that short-term workers (e.g., telephone repair workers, utility workers, or exterminators) who may come in contact with asbestos in a school are provided information regarding the locations of ACBM and suspected ACBM assumed to be ACM.

(e) Ensure that warning labels are posted in accordance with § 763.95.

(f) Ensure that management plans are available for inspection and notification of such availability has been provided as specified in the management plan under § 763.93(g).

(g)(1) Designate a person to ensure that requirements under this section are properly implemented.

(2) Ensure that the designated person receives adequate training to perform duties assigned under this section. Such training shall provide, as necessary, basic knowledge of:

(i) Health effects of asbestos.

(ii) Detection, identification, and assessment of ACM.

(iii) Options for controlling ACBM.

(iv) Asbestos management programs.

(v) Relevant Federal and State regulations concerning asbestos, including those in this subpart E and those of the Occupational Safety and Health Administration, U.S. Department of Labor, the U.S. Department of Transportation and the U.S. Environmental Protection Agency.

(h) Consider whether any conflict of interest may arise from the interrelationship among accredited personnel and whether that should influence the selection of accredited personnel to perform activities under this subpart.

§ 763.85 Inspection and reinspections.

(a) *Inspection.* (1) Except as provided in paragraph (a)(2) of this section, before October 12, 1988, local education agencies shall inspect each school building that they lease, own, or otherwise use as a school building to identify all locations of friable and nonfriable ACBM.

(2) Any building leased or acquired on or after October 12, 1988, that is to be used as a school building shall be inspected as described under paragraph (a) (3) and (4) of this section prior to use as a school building. In the event that emergency use of an uninspected building as a school building is necessitated, such buildings shall be inspected within 30 days after commencement of such use.

(3) Each inspection shall be made by an accredited inspector.

(4) For each area of a school building, except as excluded under § 763.99, each person performing an inspection shall:

(i) Visually inspect the area to identify the locations of all suspected ACBM.

(ii) Touch all suspected ACBM to determine whether they are friable.

(iii) Identify all homogeneous areas of friable suspected ACBM and all homogeneous areas of nonfriable suspected ACBM.

(iv) Assume that some or all of the homogeneous areas are ACM, and, for each homogeneous area that is not assumed to be ACM, collect and submit for analysis bulk samples under §§ 763.86 and 763.87.

(v) Assess, under § 763.88, friable material in areas where samples are collected, friable material in areas that are assumed to be ACBM, and friable ACBM identified during a previous inspection.

(vi) Record the following and submit to the person designated under § 763.84 a copy of such record for inclusion in the management plan within 30 days of the inspection:

(A) An inspection report with the date of the inspection signed by each accredited person making the inspection, State of accreditation, and if applicable, his or her accreditation number.

(B) An inventory of the locations of the homogeneous areas where samples are collected, exact location where each bulk sample is collected, dates that samples are collected, homogeneous areas where friable suspected ACBM is assumed to be ACM, and homogeneous areas where nonfriable suspected ACBM is assumed to be ACM.

(C) A description of the manner used to determine sampling locations, the name and signature of each accredited inspector who collected the samples, State of accreditation, and, if applicable, his or her accreditation number.

(D) A list of whether the homogeneous areas identified under paragraph (a)(4)(vi)(B) of this section, are surfacing material, thermal system insulation, or miscellaneous material.

(E) Assessments made of friable material, the name and signature of each accredited inspector making the assessment, State of accreditation, and if applicable, his or her accreditation number.

(b) *Reinspection.* (1) At least once every 3 years after a management plan is in effect, each local education agency shall conduct a reinspection of all friable and nonfriable known or assumed ACBM in each school building that they lease, own, or otherwise use as a school building.

(2) Each inspection shall be made by an accredited inspector.

(3) For each area of a school building, each person performing a reinspection shall:

(i) Visually reinspect, and reassess, under § 763.88, the condition of all friable known or assumed ACBM.

(ii) Visually inspect material that was previously considered nonfriable ACBM and touch the material to determine whether it has become friable since the last inspection or reinspection.

(iii) Identify any homogeneous areas with material that has become friable since the last inspection or reinspection.

(iv) For each homogeneous area of newly friable material that is already assumed to be ACBM, bulk samples may be collected and submitted for analysis in accordance with §§ 763.86 and 763.87.

(v) Assess, under § 763.88, the condition of the newly friable material in areas where samples are collected, and newly friable materials in areas that are assumed to be ACBM.

(vi) Reassess, under § 763.88, the condition of friable known or assumed ACBM previously identified.

(vii) Record the following and submit to the person designated under § 763.84 a copy of such record for inclusion in the management plan within 30 days of the reinspection:

(A) The date of the reinspection, the name and signature of the person making the reinspection, State of accreditation, and if applicable, his or her accreditation number, and any changes in the condition of known or assumed ACBM.

(B) The exact locations where samples are collected during the reinspection, a description of the manner used to determine sampling locations, the name and signature of each accredited inspector who collected the samples, State of accreditation, and, if applicable, his or her accreditation number.

(C) Any assessments or reassessments made of friable material, the name and signature of the accredited

tion must be signed by the chief executive officer of the manufacturer.

§ 762.70 Processors of fully halogenated chlorofluoroalkanes for aerosol propellant uses.

(a) Every person who after December 15, 1978, processes fully halogenated chlorofluoroalkanes for aerosol propellant uses subject to the TSCA must submit an annual report. A separate report must be submitted for each processing facility.

(b) Every report submitted by a processor must contain the following information and conform to the following format:

(1) Page one:

(i) Name of business.

(ii) Business address.

(iii) Chief executive officer.

(iv) Facility address.

(v) Name, business address, and telephone number of individual most knowledgeable of the contents of this report. This report covers purchases and processing of fully halogenated chlorofluoroalkanes for aerosol propellant uses from (date to date).

(2) Page two (and subsequent pages if necessary):

Purchases of fully halogenated chlorofluoroalkanes:

Purchased from/Quantity purchased (in pounds)

(List names and business addresses y/List).

Processing of fully halogenated chlorofluoroalkanes:

Use and Quantity (in pounds)

1. Mercaptan mine warning device (list)
2. Release agent.
3. Pesticides.
4. Diamond-grit spray.
5. Electrical/electronic.
6. Aviation.
7. Defense.
8. Food, food additives, drugs, cosmetics, and devices.
9. Other (explain).

(3) At the bottom of the last page make the following statement and certification:

I understand that I may assert a claim of business confidentiality by marking any part or all of this information as "TSCA Confidential Business Information" and that information so marked will not be disclosed except in accordance with the procedures set forth in 40 CFR Part 2. I further understand that if I do not mark this information as confidential, EPA may disclose it publicly without providing me notice of an opportunity to object. I certify that to the best of my knowledge the contents of this report are accurate and complete.

Date _____

Signed _____

Position Title _____

(4) The statement and certification required by paragraph (b)(3) of this section must be signed by the highest official at the processing facility for which the report is being submitted.

PART 763—ASBESTOS

Subparts A–C—(Reserved)

Subpart D—Reporting Commercial and Industrial Uses of Asbestos

Sec.

Subpart E—Asbestos-Containing Materials in Schools

Subpart F—Friable Asbestos-Containing Materials in Schools

Subpart G—Asbestos Abatement Projects

Subpart H—(Reserved)

Subpart I—Prohibition of the Manufacture, Importation, Processing, and Distribution in Commerce of Certain Asbestos-Containing Products; Labeling Requirements

AUTHORITY: 15 U.S.C. 2605 and 2607(c).

Subparts A–C—(Reserved)

Subpart D—Reporting Commercial and Industrial Uses of Asbestos

SOURCE: 47 FR 33207, July 30, 1982, unless otherwise noted.

§ 763.60 Scope and compliance.

(a) This rule requires reporting by persons who manufacture, import, or process asbestos. Different reporting requirements are imposed depending on the person's activity. Manufacturers, importers and processors of commercial and industrial asbestos fiber must report quantity, use, and exposure information. Importers of mixtures and articles containing asbestos and processors of asbestos mixtures will report to EPA in two phases. They initially must report limited information about processing or importation. Some must subsequently report additional information if they are selected as respondents in a sample survey.

(b) Subsection 15(3) of TSCA makes it unlawful for any person to fail or refuse to submit information required under this rule. Section 16 provides that a violation of section 15 renders a person liable to the United States for a civil penalty and possible criminal prosecution. Under section 17, the district courts of the United States have jurisdiction to restrain any violation of section 15.

§ 763.63 Definitions.

The definitions in section 3 of TSCA and the following definitions apply for this rule:

(a) *Asbestos* means the asbestiform varieties of: chrysotile (serpentine); crocidolite (riebeckite); amosite (cummingtonite-grunerite); anthophyllite; tremolite; and actinolite.

(b) *Asbestos mixture* means a mixture which contains bulk asbestos or another asbestos mixture as an intentional component. An asbestos mixture may be either amorphous or a sheet, cloth fabric, or other structure. This term does not include mixtures which

the buried asbestos wastes. In addition, the estimated depth of the waste below the surface should be recorded whenever a landfill section is closed. As mentioned previously, such information should be recorded in the land deed or other record along with a notice warning against excavation of the area.

[52 FR 41897, Oct. 30, 1987]

Subpart F—Friable Asbestos-Containing Materials in Schools

SOURCE: 47 FR 23369, May 27, 1982, unless otherwise noted.

§ 763.100 Scope and purpose.

(a) This rule requires local education agencies to identify friable asbestos-containing material in public and private schools by visually inspecting school buildings for friable materials, sampling such materials, and having samples analyzed by appropriate techniques referred to in the rule. In addition, the rule requires local education agencies to post a notice of the results of inspections and analyses. The rule requires local education agencies to provide warnings on the health effects of asbestos and instructions on methods to avoid or reduce exposure to school employees of any school with friable asbestos-containing material and to notify parent-teachers associations of the results of inspections. The rule also includes recordkeeping requirements. Local education agencies may contractually delegate their duties under this rule, but they remain responsible for the proper performance of those duties. Local education agencies are encouraged to consult with EPA Regional Asbestos Coordinators for assistance in complying with this rule.

(b) The addresses and telephone numbers of the EPA Regional Asbestos Coordinators are:

(1) EPA Region I

Asbestos Coordinator, Air and Hazardous Materials Division, JFK Federal Bldg., Boston, MA 02203 (617) 223-0585

(2) EPA Region II

Asbestos Coordinator, Room 1013, Woodbridge Avenue, Edison, NJ 08837 (201) 321-6668

(3) EPA Region III

Asbestos Coordinator, Curtis Building, Sixth and Walnut Streets, Philadelphia, PA 19106 (215) 597-9859, 597-8683

(4) EPA Region IV

Asbestos Coordinator, 345 Courtland Street, Atlanta, GA 30365 (404) 881-3864

(5) EPA Region V

Asbestos Coordinator, 230 S. Dearborn St., Chicago, IL 60604 (312) 886-6003

(6) EPA Region VI

Asbestos Coordinator, First Internat'l Bldg., 1201 Elm Street, Dallas, TX 75270 (214) 767-2734

(7) EPA Region VII

Asbestos Coordinator, 324 East 11 Street, Room 1500, Kansas City, MO 64106 (816) 374-6538

(8) EPA Region VIII

Asbestos Coordinator, 1860 Lincoln Street, Denver, CO 80295 (303) 837-3926

(9) EPA Region IX

Asbestos Coordinator, 215 Fremont Street, San Francisco, CA 94105 (415) 974-8123

(10) EPA Region X

Asbestos Coordinator, 1200 Sixth Avenue, Seattle, WA 98101 (206) 442-2888

§ 763.103 Definitions.

For the purposes of this part:

(a) *Act* means the Toxic Substances Control Act (TSCA), 15 U.S.C. 2601, *et seq.*

(b) *Asbestos* means the asbestiform varieties of: chrysotile (serpentine); crocidolite (riebeckite); amosite (cummingtonite-grunerite); anthophyllite; tremolite; and actinolite.

(c) *Asbestos-containing material* means any material which contains more than 1 percent asbestos by weight.

(d) *Friable material* means any material applied onto ceilings, walls, structural members, piping, ductwork, or any other part of the building structure which, when dry, may be crumbled, pulverized, or reduced to powder by hand pressure.

(e) *Local education agency* means:

(1) Any local education agency as defined in section 198(a)(10) of the Elementary and Secondary Education Act of 1965 (20 U.S.C. 2854).

(2) The governing authority of any nonprofit elementary or secondary school, where the term "nonprofit" means owned and operated by one or more nonprofit corporations or associations no part of the net earnings of which inures, or may lawfully inure, to the benefit of any private shareholder or individual.

(f) *Sampling area* means any area, whether contiguous or not, within a school building which contains friable material that is homogeneous in texture and appearance.

(g) *School* means any public or private day or residential school that provides elementary or secondary education for grade 12 or under as determined under State law, or any school of any Agency of the United States.

(h) *School buildings* means:

(1) Structures used for the instruction of school children, including classrooms, laboratories, libraries, research facilities and administrative facilities.

(2) School eating facilities, and school kitchens.

(3) Gymnasiums or other facilities used for athletic or recreational activities, or for courses in physical education.

(4) Dormitories or other living areas of residential schools.

(5) Maintenance, storage, or utility facilities essential to the operation of the facilities described in paragraphs (h)(1) through (4) of this section.

(i) *Use of asbestos* means the presence of asbestos-containing material in school buildings.

§ 763.105 Inspection for friable material.

(a) Local education agencies shall inspect each school building which they lease, own, or otherwise use as a school building, to locate all friable material.

(b) This inspection shall consist of looking for and touching all suspect materials, including surfaces behind suspended ceilings or other non-permanent structures which may be entered during normal building maintenance or repairs. For further information on inspection procedures, officials should consult Chapter 4 of "Asbestos-Containing Materials in School Buildings: A Guidance Document," Part 1 (EPA No. C00090). Particular attention should be paid to the recommendations regarding respirators. Copies of the document can be obtained by calling 800-424-9065 (in Washington, DC call 554-1404)

§ 763.107 Sampling friable material.

(a) If friable materials are found in a school building, local education agencies shall identify each distinct sampling area of friable materials within the school building, take at least three samples from locations distributed throughout the sampling area, and label each sample container with a sample identification number unique to the sampling location and building.

(b) Officials should consult "Asbestos-Containing Materials in School Buildings: A Guidance Document," Part 1, Chapter 5, for further information on sampling procedures. The requirement that three samples be taken in each sampling area supersedes the recommendation made in the Guidance Document to take one sample per 5000 square feet of friable material.

(c) Sampling locations should be randomly distributed within the sampling; the locations should not be selected simply for convenience or ease of reaching the sample, or because the sampler judges the location to be representative. Samples shall be taken using small sealable containers; samples shall penetrate the depth of the friable material to the substrate.

§ 763.109 Analyzing friable material.

Local education agencies shall have all samples of friable material analyzed for asbestos using Polarized Light Microscopy (PLM), supplemented where necessary by X-ray Diffraction, in accordance with "Interim Method for the Determination of Asbestiform Minerals in Bulk Insulation Samples," which is found under appendix A of this Subpart. Persons interested in analyzing bulk samples for asbestos can obtain copies of the document by calling 202-554-1404. A list of laboratories capable of conducting analyses of friable materials can be obtained by calling the National Voluntary Accreditation Program of the National Institute of Science and Technology at 301-975-4016. Officials should consult "Asbestos-Containing Materials in School Buildings

inspector making the assessments, State of accreditation, and if applicable, his or her accreditation number.

(c) *General.* Thermal system insulation that has retained its structural integrity and that has an undamaged protective jacket or wrap that prevents fiber release shall be treated as nonfriable and therefore is subject only to periodic surveillance and preventive measures as necessary.

§ 763.86 Sampling.

(a) *Surfacing material.* An accredited inspector shall collect, in a statistically random manner that is representative of the homogeneous area, bulk samples from each homogeneous area of friable surfacing material that is not assumed to be ACM, and shall collect the samples as follows:

(1) At least three bulk samples shall be collected from each homogeneous area that is 1,000 ft^2 or less, except as provided in § 763.87(c)(2).

(2) At least five bulk samples shall be collected from each homogeneous area that is greater than 1,000 ft^2 but less than or equal to 5,000 ft^2, except as provided in § 763.87(c)(2).

(3) At least seven bulk samples shall be collected from each homogeneous area that is greater than 5,000 ft^2, except as provided in § 763.87(c)(2).

(b) *Thermal system insulation.* (1) Except as provided in paragraphs (b) (2) through (4) of this section and § 763.87(c), an accredited inspector shall collect, in a randomly distributed manner, at least three bulk samples from each homogeneous area of thermal system insulation that is not assumed to be ACM.

(2) Collect at least one bulk sample from each homogeneous area of patched thermal system insulation that is not assumed to be ACM if the patched section is less than 6 linear or square feet.

(3) In a manner sufficient to determine whether the material is ACM or not ACM, collect bulk samples from each insulated mechanical system that is not assumed to be ACM where cement or plaster is used on fittings such as tees, elbows, or valves, except as provided under § 763.87(c)(2).

(4) Bulk samples are not required to be collected from any homogeneous area where the accredited inspector has determined that the thermal system insulation is fiberglass, foam glass, rubber, or other non-ACBM.

(c) *Miscellaneous material.* In a manner sufficient to determine whether material is ACM or not ACM, an accredited inspector shall collect bulk samples from each homogeneous area of friable miscellaneous material that is not assumed to be ACM.

(d) *Nonfriable suspected ACBM.* If any homogeneous area of nonfriable suspected ACBM is not assumed to be ACM, then an accredited inspector shall collect, in a manner sufficient to determine whether the material is ACM or not ACM, bulk samples from the homogeneous area of nonfriable suspected ACBM that is not assumed to be ACM.

§ 763.87 Analysis.

(a) Local education agencies shall have bulk samples, collected under § 763.86 and submitted for analysis, analyzed for asbestos using laboratories accredited by the National Bureau of Standards (NBS). Local education agencies shall use laboratories which have received interim accreditation for polarized light microscopy (PLM) analysis under the EPA Interim Asbestos Bulk Sample Analysis Quality Assurance Program until the NBS PLM laboratory accreditation program for PLM is operational.

(b) Bulk samples shall not be composited for analysis and shall be analyzed for asbestos content by PLM, using the "Interim Method for the Determination of Asbestos in Bulk Insulation Samples" found at Appendix A to subpart F in 40 CFR Part 763.

(c)(1) A homogeneous area is considered not to contain ACM only if the results of all samples required to be collected from the area show asbestos in amounts of 1 percent or less.

(2) A homogeneous area shall be determined to contain ACM based on a finding that the results of at least one sample collected from that area shows that asbestos is present in an amount greater than 1 percent.

(d) The name and address of each laboratory performing an analysis, the date of analysis, and the name and signature of the person performing the analysis shall be submitted to the person designated under § 763.84 for inclusion into the management plan within 30 days of the analysis.

§ 763.88 Assessment.

(a)(1) For each inspection and reinspection conducted under § 763.85 (a) and (c) and previous inspections specified under § 763.99, the local education agency shall have an accredited inspector provide a written assessment of all friable known or assumed ACBM in the school building.

(2) Each accredited inspector providing a written assessment shall sign and date the assessment, provide his or her State of accreditation, and if applicable, accreditation number, and submit a copy of the assessment to the person designated under § 763.84 for inclusion in the management plan within 30 days of the assessment.

(b) The inspector shall classify and give reasons in the written assessment for classifying the ACBM and suspected ACBM assumed to be ACM in the school building into one of the following categories:

(1) Damaged or significantly damaged thermal system insulation ACM.

(2) Damaged friable surfacing ACM.

(3) Significantly damaged friable surfacing ACM.

(4) Damaged or significantly damaged friable miscellaneous ACM.

(5) ACBM with potential for damage.

(6) ACBM with potential for significant damage.

(7) Any remaining friable ACBM or friable suspected ACBM.

(c) Assessment may include the following considerations:

(1) Location and the amount of the material, both in total quantity and as a percentage of the functional space.

(2) Condition of the material, specifying:

(i) Type of damage or significant damage (e.g., flaking, blistering, water damage, or other signs of physical damage).

(ii) Severity of damage (e.g., major flaking, severely torn jackets, as opposed to occasional flaking, minor tears to jackets).

(iii) Extent or spread of damage over large areas or large percentages of the homogeneous area.

(3) Whether the material is accessible.

(4) The material's potential for disturbance.

(5) Known or suspected causes of damage or significant damage (e.g., air erosion, vandalism, vibration, water).

(6) Preventive measures which might eliminate the reasonable likelihood of undamaged ACM from becoming significantly damaged.

(d) The local education agency shall select a person accredited to develop management plans to review the results of each inspection, reinspection, and assessment for the school building and to conduct any other necessary activities in order to recommend in writing to the local education agency appropriate response actions. The accredited person shall sign and date the recommendation, provide his or her State of accreditation, and, if applicable, provide his or her accreditation number, and submit a copy of the recommendation to the person designated under § 763.84 for inclusion in the management plan.

§ 763.90 Response actions.

(a) The local education agency shall select and implement in a timely manner the appropriate response actions in this section consistent with the assessment conducted in § 763.88. The response actions selected shall be sufficient to protect human health and the environment. The local education agency may then select, from the response actions which protect human health and the environment, that action which is the least burdensome method. Nothing in this section shall be construed to prohibit removal of ACBM from a school building at any time, should removal be the preferred response action of the local education agency.

(b) If damaged or significantly damaged thermal system insulation ACM is present in a building, the local education agency shall:

(1) At least repair the damaged area.

(2) Remove the damaged material if it is not feasible, due to technological factors, to repair the damage.

(3) Maintain all thermal system insulation ACM and its covering in an intact state and undamaged condition.

ACM Inventory Worksheet

Project: 886 Cluster RCLP
Building:
Room (if applicable):

TSI Inventory:

Pipe

Type	Linear or ft^2	Fitting count

Duct

Type	Duct size/app.	Ft^2

Surface Inventory

Location	Description	Ft^2

Miscellaneous Inventory

Location	Description	Ft^2

Evaluated/Sampled by:
Date:

Reviewed by:
Date:

Sampling Record

A Guidance Document," Part I, Chapter 6, for further information on analysis of friable materials.

[58 FR 15809, Mar. 24, 1993]

§ 763.111 Warnings and notifications.

(a) Local education agencies shall post in the primary administrative and custodial offices and in the faculty common rooms of each school under their authority a completed copy of the following Notice to School Employees unless no friable asbestos-containing material is present in the school. The notice shall remain posted indefinitely in any school which has friable asbestos-containing material.

Project: 886 Cluster RCLP
Building:
Room (if applicable):
Area is classified as (circle as appropriate): Affected Unaffected
Analysis (circle as appropriate): Asbestos PCB Swipe PCB media Lead/Metals

Sample Number	Detailed Sample Type and Description (i.e., type of material, equipment, equipment components, media)	Comments

Evaluated/Sampled by:
Date:

Reviewed by:
Date:

Purpose:

The purpose of this appendix is to provide a consistent approach for the identification and analysis of materials potentially containing PCBs for the 886 Cluster RCLP. The sampling technique presented in this appendix is consistent with EPA Method 560/560-5-85-026 and 40 CFR 761.125.

Scope:

All areas of facilities or buildings do not have the same potential for PCB contamination. Specific building materials, equipment, and equipment components suspected of being a source of PCBs and/or PCB contaminated will be identified. Identification includes identification of affected areas (i.e., areas that contain suspect building materials, equipment, or equipment components) and unaffected areas. Affected areas will be subsequently characterized using the instructions contained herein. Additionally, during the characterization activities, any areas/equipment/equipment components suspected of being a source of PCBs and /or PCB-contaminated which were not previously identified will be included in the characterization at that time.

Instructions:

1)Identification of affected areas

There are building materials used that have potential PCB contamination or known PCB contamination based on past or preliminary RFETS and industry surveillance. These affected materials/equipment/equipment components are:

- Transformers
- Fluorescent light ballasts
- Electrical wiring
- Oils
- Paints
- Gaskets in HVAC systems

Each room or building (in the absence of unique rooms) will be evaluated for affected areas.

2) The findings of the evaluation will be documented for each room or building within the 886 Cluster on the attached records. The room and specific location of the affected area will be diagrammed on the record. The affected areas identified and areas immediately surrounding or adjacent to locations will be inspected for possible spills. The results of this inspection will be noted on the attached records. Sampling of possible spill areas will be sampled by swipe (i.e, smear) sampling as described below.

All areas not classified as affected will be considered unaffected. Classification of a room or building (in the absence of unique rooms) as unaffected will be documented on the attached records.

3) Sampling

Media samples:

Media shall be sampled for PCBs if encountered and if a sample can be obtained without dismantling the suspect equipment/equipment components.

a) Fill one 8 ounce glass jar with media (i.e., liquid or solid) to be sampled using appropriate sampling tools

b)The samples will be handled in accordance with the Environmental Management Department (EMD) Operating Procedures Volume I, Field Operations 5-21000-OPS-FO.13, Containerization, Preserving, Handling, and Shipping of Soil and Water Samples.

APPENDIX B

PCB SAMPLING AND ANALYSIS

Sampling Record

Project: 886 Cluster RCLP
Building:
Room (if applicable):
Area is classified as (circle as appropriate): Affected Unaffected
Analysis (circle as appropriate): Asbestos PCB Swipe PCB media Lead/Metals

Sample Number	Detailed Sample Type and Description (i.e., type of material, equipment, equipment components, media)	Comments

Evaluated/Sampled by:
Date:

Reviewed by:
Date:

c) The locations of samples must be diagrammed on schematics that illustrate the building, infrastructure, or layout of interest. The schematics shall include all detail associated with the sample location, e.g., sampling grid pattern, dimensions, random numbers assigned, and actual numbers chosen for final sample locations.

Swipe Samples:

a)Measure the area of the suspected contamination

b)Grid over the area of suspected contamination at 100 cm^2

c) Soak 3" by 3" gauze pad in solvent and place in labeled vial

d) Using template, mark area to be swabbed.

e)Remove swab from vial and swab area inside square, from right to left across area then top to bottom across area.

f)Return swab to bottle and label.

g)The locations of samples must be diagrammed on schematics as indicated in the attached records that illustrate the building, infrastructure, or layout of interest. The schematics shall include all detail associated with the sample location, e.g., sampling grid pattern, dimensions, random numbers assigned, and actual numbers chosen for final sample locations.

Analysis:

PCB concentrations will be determined by method SW8081.

Sample Location - Schematic

Illustrated by:
Date:

Reviewed by:
Date:

Purpose:

The purpose of this appendix is to provide a consistent approach for the identification and analysis of materials potentially containing lead and metals for the 886 Cluster RCLP. The sampling technique presented in this appendix is ASTM Method E1729-95.

Scope:

All areas of facilities or buildings do not have the same potential for lead and metals contamination. Specific building materials are suspected of being a source of lead and/or metals contamination will be identified. Identification includes identification of affected areas (i.e., areas that contain suspect building materials) and unaffected areas. Affected areas will be subsequently characterized using the instructions contained herein. Additionally, during the characterization activities, any media suspected to be lead- and/or metals-contaminated which were not previously identified will be included in the characterization at that time.

Instructions:

1)Identification of affected areas

Potential lead-/metal-containing materials include the following:

- paints, categorized by color, texture, and luster
- gloveboxes and associated shielding equipment
- piping
- plates/bars/brackets/shields
- lead fills in walls
- skirting
- additives (e.g., in plaster)

Each room or building (in the absence of unique rooms) will be evaluated for affected areas.

2) The findings of the evaluation will be documented for each room or building within the 886 Cluster on the attached records. The room and specific location of the affected area will be diagrammed on the record. The affected areas identified and areas immediately surrounding or adjacent to locations will be inspected for possible spills. The results of this inspection will be noted on the attached records. Sampling of possible spill areas will be sampled by swipe (i.e, smear) sampling as described below.

All areas not classified as affected will be considered unaffected. Classification of a room or building (in the absence of unique rooms) as unaffected will be documented on the attached records.

3) Sampling

a) Bulk samples will be collected by the coring technique described in ASTM Method E 1729-95 (attached). Under no circumstances will the core exceed 2 inches into the material being sampled.

b)A minimum of 200 grams of bulk sample is required.

c)The samples will be handled in accordance with the Environmental Management Department (EMD) Operating Procedures Volume I, Field Operations 5-21000-OPS-FO.13, Containerization, Preserving, Handling, and Shipping of Soil and Water Samples.

APPENDIX C

LEAD AND METALS SAMPLING AND ANALYSIS

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d) The locations of samples must be diagrammed on schematics that illustrate the building, infrastructure, or layout of interest. The schematics shall include all detail associated with the sample location, e.g., sampling grid pattern, dimensions, random numbers assigned, and actual numbers chosen for final sample locations.

Analysis:

The lead and metals samples will be analyzed by method SW6010A.

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Sampling Record

Project: 886 Cluster RCLP
Building:
Room (if applicable):
Area is classified as (circle as appropriate): Affected Unaffected
Analysis (circle as appropriate): Asbestos PCB Swipe PCB media Lead/Metals

Sample Number	Detailed Sample Type and Description (i.e., type of material, equipment, equipment components, media)	Comments

Evaluated/Sampled by:
Date:

Reviewed by:
Date:

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Sample Location - Schematic

Illustrated by:
Date:
Reviewed by:
Date:

APPENDIX D

SAMPLING HANDLING

- Thermometer
- Blue ice
- Sample labels
- COC forms
- Decontamination equipment
- Preservatives
- Baggies for containers
- Bubble wrap
- Vermiculite or equivalent
- Strapping and clear tape
- Custody seals
- Garbage bags
- Plastic 5-gallon buckets

Appropriate uses for the equipment listed are detailed in the following sections of this SOP.

3.2 Department/Office Contact List

RFETS Site Radiological Control is responsible for providing the appropriate documentation for RAD screening, and monitoring of all field samples for shipment off site.

3.3 Sample Containers and Preservative

Only sample containers certified as clean by the manufacturer will be used for sample collection. Newly fabricated containers may be utilized for radionuclide samples, and are not required to be certified. The containers and preservatives may be obtained from the contracted analytical laboratory, their designated supplier, or a suitable chemical supply company. Any preservative(s) required may be added to the container by the contracted analytical laboratory, field sampling team, sample manager, and/or on-site chemist prior to or during sample collection.

The matrices discussed in this SOP for chemical geotechnical, and radiological parameters are:

Soil Matrix - to include soils, sediments, and sludges (see SOP GT.8, Surface Soil Sampling, SOP SW.6, Sediment Sampling)

Water Matrix - to include surface water, groundwater and process liquids (see SOP GW.6, Groundwater Sampling; SOP SW.3, Surface Water Sampling, SOP SW.7, Collection of Tap Water Samples; SOP SW.8, Pond Sampling; and SOP SW.9, Industrial Effluent and Pond Discharge Sampling)

Tables A-1 and A-2 show parameters of interest for water and soil matrices with the associated container size, preservatives (chemical and/or temperature); and holding times. Tables A-3 shows geotechnical parameters, containers, preservatives, and holding times for soil and geosynthetic matrices. Table A-5 shows geotechnical parameters, containers, preservatives, and holding times for geotechnical soil and geosynthetic materials.

Rocky Mountain
Remediation Services, L.L.C.
... protecting the environment

PROCEDURE

CONTAINERIZATION, PRESERVING, HANDLING, AND SHIPPING OF SOIL AND WATER SAMPLES

FO.13
Revision 3
Date Effective: 03/14/97

APPROVED: _____
Ann Tyson, Vice President, Environmental Restoration

1.0 PURPOSE

This standard operating procedure (SOP) describes procedures that will be used at Rocky Flats to address sample containers, preservatives, handling, packaging and shipping of soil/sediment and water samples collected at the Rocky Flats Environmental Technology Site (RFETS).

2.0 SCOPE

This procedure is to be used as part of the sampling process for Environmental Restoration activities at RFETS. All personnel performing these procedures are required to have the appropriate health and safety training as specified in the site-specific Health and Safety Plan. In addition, all personnel are required to have a complete understanding of the procedures described within this SOP and receive specific training regarding these procedures.

Only qualified personnel will be allowed to perform these procedures. Required qualifications are based on minimum of a two year science related degree and/or education, previous experience, on-the-job training, and supervision by an on-set sample coordinator. The subcontractor's project manager will document personnel qualifications related to this procedure in the subcontractor's project QA files.

3.0 INSTRUCTIONS

Procedures for the containerizing, preserving, handling and shipping of soil and water samples detailed in this SOP follow criteria of the USEPA. This SOP is intended to present general guidelines for proper sample handling and any deviations or modifications will be documented in the Scope of Work or specific Task Order as well as SOP addendum forms.

3.1 Equipment List

The following list of equipment is not intended to be task specific. The equipment and materials shown are the minimum that may be needed to ensure that proper procedures are followed for sample handling, packaging, and shipping.

- Sample containers/bottles
- Coolers

Multiple analytes may be combined in bottles if volume and preservations are comparable and in accordance with the appropriate analytical method.

3.5 Chain of Custody Record

Official custody of samples must be maintained and documented from the time of collection until the time that valid analytical results have been obtained or the laboratory has been released to dispose of the sample. The sampling team will be responsible for initiating the original chain of custody (COC) form and will sign and date this form when relinquishing custody of samples to the sample manager. Upon receipt, the sample manager will check the COC and all sample labels to ensure that all samples are accounted for and in good condition, and that no errors were made in labeling and/or completing the COC.

A sample is considered to be in a person's custody if any of the following conditions are met:

- The sample is in the person's physical possession.
- The sample is in line of sight of the person after he/she has taken possession.
- The sample is secured by that person so that any tampering can be detected.
- A sample is secured by the person in possession in an area which only authorized personnel can enter.

3.5.1 Tampering of Sample Containers

If, at any time after samples have been secured, custody seals are identified as having been tampered with, this procedure will be followed to ensure that sample integrity has not been compromised:

- Check cooler temperature to verify 4°C.
- Check with all personnel having access to sample coolers to verify possible inadvertent tampering.
- Check every sample container for any signs of tampering, such as loose lids, foreign objects in containers, broken or leaking containers, etc.
- Check to ensure adequate and appropriate packaging.
- Document all findings of the incident in the sample manager's field log book.

If it is determined that malicious tampering of samples has occurred and/or it is believed that sample integrity has been compromise the subcontractor will immediately contact the RFETS project manager.

If it can be determined that sample integrity has not been compromised based on the above criteria, document findings in sample manager's field logbook and proceed with this standard operating procedure.

3.4 Container Labeling, Decontamination, and Field Packaging

The sample bottles will be labeled by the sample manager or field sampling team. Collection time and date will be completed in the field by the sampler. The labels will indicate:

- Activity name and/or number
- Unique sample number
- Sample time and date
- Chemical preservative used
- Sample type (grab, composite)
- Analyses required
- Filtered/unfiltered
- Comments or special precautions, as needed
- Samplers initials

The sample label will be marked with a waterproof pen. If needed, clear tape will be placed over labels before sampling to assure that the labels remain legible. If errors are discovered in the COC, the sampler or Sample Manager may correct the mistake by striking through the error with a single line and initialing adjacent to the correction. Write-overs are not acceptable.

Subsequent to sampling, the exterior of the sample containers will be cleaned and radiologically cleared in accordance with Environmental Monitoring Radiological Guidelines, HSP 18.10, Health and Safety Practices Manual, and placed in coolers lined with a plastic bag dedicated for sample and sample container transportation. The temperature in the coolers will be maintained at approximately 4°C (if required) by adding sealed plastic bags containing blue ice (or an equivalent) to the coolers.

Samples will be placed in a cooler with blue ice (if required) and transferred to the laboratory or sample refrigerator as soon as possible to chill the samples to 4°C +/- 2°C. The field temperatures of the cooler/samples will not be monitored to prevent causing a rise in temperature in the cooler/samples by opening the cooler multiple times. Samples will not cool down to 4°C in the cooler during the sampling process. Radiological samples do not require refrigeration but must be secured in a cool, dry area.

Sample bottles may be packaged in the field or in the subcontractor trailer. The sampler/packer shall use best judgment when packing samples. Delivery of samples to the on-site or local lab (Denver metro area) will not require the stringent packing requirements applicable to off-site shipments, if delivery can be accomplished without significant risk of sample bottle breakage. Samples delivered to an on-site laboratory may only require custody seals on bottles and placement in a cooler with blue ice (as appropriate) if container integrity can be assured during transport. Samples delivered to Denver metro area laboratories by RFETS personnel are not required to use vermiculite or packaging labels (e.g., fragile and up labels) if the container integrity can be assured during delivery. All samples delivered by third party carriers (e.g. Federal Express) are required to use the complete packaging requirements established in Section 3.7.

- Requested analyses
- Sample matrix
- Filtered/unfiltered
- Designation of QC samples (ONLY for MS and MSD)
- Collection methods
- Chain of custody control numbers
- Field observations and measurements during sampling (comment section)
- Signature of responsible observer

For composite samples collected over time, the time and date of the final aliquot shall be recorded for the RFETS database. The sample log form or field log book shall include the time and dates for the start and end times of the composite period.

3.7 Packaging and Shipping

Prior to commencement of field activities, an evaluation of historical data and process knowledge relevant to the sample matrices will be performed by appropriate radiological control personnel. Based on this evaluation, radiological control personnel will determine if supplemental radiological screening and/or a Property Release Evaluation (PRE) will be required prior to packaging and shipping samples. Supplemental radiological screening and/or a PRE may be required for the following purposes:

- Establishing that the outside of the sample containers are clean and free from radiological contamination
- Determination of the radionuclide content of the sample(s) to insure appropriate DOT requirements are met
- Determination of the radionuclide content of sample(s) to insure samples do not exceed the limits of the receiving laboratory's radioactive materials license.

All sample containers will have been decontaminated in the field. Upon receipt and verification of sample containers and COC forms, the following steps will be taken:

- The designated laboratory will be notified prior to shipment if samples collected in the field are suspected of containing any other substance for which the laboratory personnel should take additional safety precautions.
- Subcontractors are responsible for radiologically clearing all containers prior to shipment off site in accordance with Environmental Monitoring Radiological Guidelines (EMRD) HSP 18.10, Health and Safety Practices Manual (HSP).
- Line the sample cooler with a large plastic bag.
- Place approximately 3 inches of vermiculite in the bottom of the cooler.
- Wrap glass containers in bubble pack.

3.5.2 Chain of Custody Form

A four-page carbonless COC form is often used by Environmental Restoration. The original and second (yellow) copy will be included with the samples to be shipped enclosed in a plastic bag and taped inside the lid of the cooler. The third (pink or green) copy along with a photocopy of the original will remain on file at the subcontractor's on-site facility. The fourth (goldenrod or blue) copy will accompany the field crew's data disk deliverable to the RFEDS User System Manager. The contract laboratory will sign as having received the samples and return a photocopy of the COC to the RFEDS User System Manager for input into the electronic database. The COC copy and goldenrod or blue copies will then be matched and filed by RFEDS staff to complete the chain of custody procedure. The four page carbonless COC form may be phased out in the future. If so, photocopies of the original COC form will be made prior to sample shipment in lieu of the two copies kept for internal use.

The chain of custody form will include the following information:

- Unique sample number and sample location
- Project number
- Date and time of sample collection
- Signature of collector or field custodian
- Laboratory designation
- Sample matrix
- Condition of sample on receipt at the laboratory
- Chain of custody control number
- Signature and date blocks for personnel relinquishing or receiving sample custody
- Space for additional comments
- Name and phone number of emergency contact person
- Analysis requested

3.6 Field Data Documentation

All field descriptions, measurements, and observations will be recorded on the appropriate field data forms (see specific sampling SOPs and SOP FO.14, Field Data Management). The original data forms will be collected and filed on site by the designated subcontractor's data entry personnel. These forms are to be bound and submitted to RMRS with an accompanied transmittal letter at the completion of the task. This form is an example of data entries required for the Rocky Flats Environmental Data System (RFEDS) database. Data may also be recorded in field logbooks if desired. Field data will be filled out at the time a sample is taken and will include, but not be limited to, the following information:

- Sampling activity name and number
- Sampling point name and number
- Sample number
- Name(s) of collector(s) and others present
- Date and time of sample collection
- Sample container tag/label number (if appropriate)
- Preservative(s) used

4.0 RECORDS

Documentation of observations and data acquired in the field will provide information on the handling and preparation of the samples collected in addition to a permanent record. Sampling personnel will be responsible for documenting the handling preparation, packaging, and shipping of the samples. These observations and data will be recorded with waterproof ink on subject specific data sheets, (i.e. instrument calibration data sheet, field measurement data sheet and/or field logbooks).

Copies of the chain of custody records for the samples shipped during the data collection task will be kept on file at the site office and the subcontractor's main office.

The following records generated during the performance of this procedure must be controlled as follows:

Document	Record Type	Disposition
Original COC form	QA	Becomes part of the Analytical Projects Office project file
Sample log sheets or log book	QA	Becomes part of the project file

5.0 REFERENCES

5.1 Source References

A Compendium of Superfund Field Operations Methods. EPA/540/P-87/001. December 1987.

American Society for Testing and Materials (ASTM), Soil and Rock; Dimension Stone; Geosynthetics, Section 4, Volume 04.08, 1993

ASTM, Concrete and Aggregates, Section 4, Volume 04.02, 1993.

DOE 1987: *The Environmental Survey Manual.* DOE/EH-0053, Volumes 1-4. August 1987.
Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA,. Interim Final. October 1988.

Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA. Interim Final. October 1988

RCRA Facility Investigation Guidance. Interim Final. May 1989.

RMRS, 1995, *Quality Assurance Program Plan (QAPP). 95-QAPP-001.* Golden, Colorado, October, 1995.

Technical Enforcement Guidance Documentation (TEGD) USEPA. 1986

- Verify that all samples requiring screening have reported estimated radiological activity levels.
- Place wrapped sample containers upright, except for the volatile organic compounds (VOC) vials in the cooler with approximately 1 inch between them and the sides of the cooler.
- Fill the cooler approximately three-quarters full of vermiculite, making sure that sample containers are securely packed.
- Insert the two VOC vials upright in the center of the cooler.
- Fill the cooler with vermiculite, allowing adequate space at the top for blue ice.
- Bag the blue ice (or equivalent) and place several packages in the top space of the cooler.
- Seal the signed COCs in a plastic bag and a copy of the RAD screen results (as necessary) and tape it to the underside of the lid of the cooler.
- Tape the drain of the cooler shut.
- Wrap strapping tape around the cooler in two locations to secure the lid.
- Place the airbill on top of the cooler. If more than one cooler is sent to the same laboratory, an address label and a manifest label are needed.
- Place "This Side Up" and "Fragile" labels on the top and two sides of the cooler.
- Place " ↑ " labels on all four sides of the cooler.
- Place "Environmental Samples" labels on top of cooler. For coolers weighing over 75 pounds, an additional "Heavy Weight" label is required in the two opposite corners on top of the cooler.
- Place signed and dated custody seals in two locations sealing the cooler lid so that tampering will be evident.

Sample coolers may be received by courier at a predetermined area at RFETS. If arrangements cannot be made, a company vehicle is required to deliver sample coolers to the laboratory and/or courier office.

3.8 Quality Assurance/Quality Control Samples

Quality Assurance (QA) and Quality Control (QC) will be administered according to the Quality Assurance Project Plan (QAPP), the project-specific Quality Assurance Addendum (QAA), the RMRS Quality Assurance Program Description (QAPD), and QC requirements presented in this SOP.

TABLE A-1
SAMPLE CONTAINERS, SAMPLE PRESERVATION, AND SAMPLE HOLDING TIMES

WATER MATRIX

Parameter	Sample Volume/Container[a,c]	Preservative	Holding Time
Volatile Organics (VOCs)			
Contract Laboratory Program (CLP)	2 x 40-mL VOA vials with Teflon lined septum lids	Cool, 4°C	10 days
40 CFR Part 136	2 x 40-mL VOA vials with Teflon lined septum lids	Cool, 4°C[b]	7 days
40 CFR Part 136	2 x 40-mL VOA vials with Teflon lined septum lids	Cool, 4°C HCl pH <2[b]	14 days
SW-846	2 or 3 x 40-mL VOA vials with Teflon lined septum lids	Cool, 4°C HCl pH <2[b]	14 days
Drinking Water (500 Series Methods)	3 x 40-mL VOA vials with Teflon lined septum lids	Cool, 4°C HCl pH <2[q]	14 days
Extractable Organics (BNAs)	3 x 1L amber G	Cool, 4°C[b]	7 days until extraction, 40 days after extraction
Pesticides and PCBs	2 x 1L amber G	Cool, 4°C[b]	7 days until extraction, 40 days after extraction
Organophosphorus Pesticides and Herbicides	2 x 1L amber G	Cool, 4°C	7 days until extraction, 40 days after extraction
Dioxins/Furans	2 x 1-L amber G	Cool, 4°C	7 days until extraction, 40 days after extraction
Metals	1 x 1-L P	Nitric acid pH <2	6 mo[c]
Cyanide	1 x 1-L P	Sodium hydroxide[d] pH>12; Cool, 4°C	14 days
Sulfide	1 x 500 ml P	2 mL-zinc acetate and sodium hydroxide to pH>9;Cool, 4°C	7 days
Acidity	200 mL/P, G	Cool, 4° C	14 days
Alkalinity	200 mL/P, G	Cool, 4° C	14 days

Test Methods for Evaluating Solid Waste, Volume II: Field Manual Physical/Chemical Methods. USEPA. SW-846. 3rd Edition. November 1986.

User's Guide to the Contract Laboratory Program. USEPA. December 1988.

5.2 Internal References

Related SOPs cross-referenced by this SOP are:

- SOP FO.3, General Equipment Decontamination
- SOP FO.14, Data Base Management
- SOP GW.6, Groundwater Sampling
- SOP GT.8, Surface Soil Sampling
- SOP SW.6, Sediment Sampling
- SOP SW.3, Surface Water Sampling
- SOP SW.7, Collection of Tap Water Samples
- SOP SW.8, Pond Sampling
- SOP SW.9, Industrial Effluent and Pond Discharge Sampling

TABLE A-1 (continued)
SAMPLE CONTAINERS, SAMPLE PRESERVATION, AND SAMPLE HOLDING TIMES

WATER MATRIX

Parameter	Sample Volume/Container[a,c]	Preservative	Holding Time
Turbidity	200 mL/P, G	Cool, 4° C	48 hr
Nitrate as N	250 mL/P, G	Cool, 4° C	48 hr
Nitrite as N	250 mL/P, G	Cool, 4° C	48 hr
Nitrate + Nitrite as N	250 mL/P, G	Cool, 4° C, Sulfuric Acid to pH<2	28 days
Fluoride	100 mL	None	6 mo
Hardness	300 mL/P, G	Nitric Acid, pH<2	28 days
Total Organic Carbon (TOC)	50 mL/P, G	Cool, 4° C, Sulfuric Acid to pH<2	28 days
Nutrients[f]	1 L/P, G	Sulfuric Acid pH<2, Cool, 4° C	28 days
Oil and Grease	1-L G with Teflon liner	Sulfuric Acid pH<2, Cool, 4° C	28 days
Organic Halides - Total (TOX)	250 mL G with Teflon liner	Sulfuric Acid pH<2, Cool, 4° C	28 days
pH	In situ, beaker or bucket	None	Analyze immediately (24 hr)
Phenols	250 mL G with Teflon liner	Sulfuric Acid pH<2, Cool, 4° C	28 days
Phosphate-Ortho	1-L/P, G	Cool, 4° C	48 hr
Phosphorous, Total or Dissolved	500 mL/P, G	Sulfuric Acid pH<2, Cool, 4° C	28 days
Radiological Tests[h]	3 x 4 L plastic containers[i]	Nitric Acid, pH<2	6 mo
Tritium	125 mL G	None	None

TABLE A-1 (continued)
SAMPLE CONTAINERS, SAMPLE PRESERVATION, AND SAMPLE HOLDING TIMES

WATER MATRIX

Parameter	Sample Volume/Container[a,c]	Preservative	Holding Time
Bacteriological (Coliform)	1 L/P, G (Sterile)	Cool, 4° C[b]	6 hr
Whole Effluent Toxicity (Acute, Chronic)	16 L/P	Cool, 4° C	48 hr
Biochemical Oxygen Demand 5 Day (BOD5)	2 L/P, G	Cool, 4° C	48 hr
Carbonaceous Biochemical Oxygen Demand 5 Day (CBOD5)	2L/P, G	Cool, 4° C	48 hr
Chemical Oxygen Demand (COD)	300 mL/P, G	Cool, 4° C, Sulfuric Acid to pH<2	28 days
Ammonia	400 mL/P, G	Cool, 4° C, Sulfuric Acid to pH<2	28 days
Chloride	200 mL/P, G	None	28 days
Chlorine Residual	In situ, beaker or bucket	None	Analyze immediately
Color	200 mL	Cool, 4° C	48 hr
Conductivity	300 mL/P, G	Cool, 4° C	28 days (determine on-site if possible)
Chromium, Hexavalent	200 mL/P, G	Cool, 4° C	24 hr
Dissolved Oxygen (DO) (Probe)	In situ, beaker or bucket	None	Determine on-site
Dissolved Oxygen (DO) (Winkler)	300 mL glass, BOD bottle	Fix on site, store in dark	8 hr (deter-mine on-site if possible)
Solids, Settleable	2 L/P, G	Cool, 4° C	48 hr
Solids (Total and Suspended, etc.)	200 mL/P, G	Cool, 4° C	7 days
Sulfates	500 mL/P, G	Cool, 4° C	28 days
Temperature	In situ, beaker or bucket	None	Analyze immediately

TABLE A-2
SAMPLE CONTAINERS, SAMPLE PRESERVATION, AND SAMPLE HOLDING TIMES

SOIL MATRIX

Parameter	Sample Volume/Container[a]	Preservative	Holding Time
Purgeable Organics (VOCs)	120-mL capped core, 4 or 8 oz. wide mouth glass jar Teflon-lined closure	Cool, 4°C	14 days
Extractable Organics (BNAs), Pesticides and PCBs	1 x 8-oz. wide-mouth glass jar, Teflon lined closure	Cool, 4°C	14 days until extraction, 40 days after extraction
Organophosphorus Pesticides and Herbicides	1 x 8-oz. wide-mouth glass jar, Teflon lined closure	Cool, 4°C	14 days until extraction, 40 days after extraction
Dioxins/Furans	1 x 8-oz. wide-mouth glass jar, Teflon lined closure	Cool, 4°C	14 days until extraction, 40 days after extraction
Metals	1 x 8-oz. wide-mouth glass jar	Cool, 4°C	6 mo[c]
Cyanide	1 x 8-oz. wide-mouth glass jar	Cool, 4°C	14 days
Sulfide	1 x 8-oz. wide-mouth glass jar	Cool, 4°C	7 days
TCLP Volatiles	8-oz. wide-mouth glass jar, Teflon lined closure	Cool, 4°C	Extract within 14 days, analyze within 14 days
TCLP Semivolatiles Pesticides, Herbicides	8-oz. wide-mouth glass jar, Teflon lined closure	Cool, 4°C	Extract within 14 days, prep within 7 days, analyze within 40 days
Reactivity (CN^-, H_2S) pH, EOX	8-oz. wide-mouth glass jar, Teflon lined closure	Cool, 4°C	7-14 days
TCLP Metals	8-oz. wide-mouth glass jar, Teflon lined closure	Cool, 4°C	Extract within 180 days, analyze within 180 days[g]
Nutrients[f]	8-oz. wide-mouth glass jar, Teflon lined closure	Cool, 4°C	28 days
Radiological Tests[h] and Tritium	500 mL wide mouth glass[i]	None	None

TABLE A-1 (continued)
SAMPLE CONTAINERS, SAMPLE PRESERVATION, AND SAMPLE HOLDING TIMES

WATER MATRIX

Parameter	Sample Volume/Container[a,c]	Preservative	Holding Time
Toxicity Characteristic Leaching Procedure (TCLP)	4 L amber glass[r]	Cool, 4° C	
TCLP Volatiles			Extract within 14 days, analyze within 14 days
TCLP Semivolatiles Pesticides, and Herbicides			Extract within 14 days, prep within 7 days, analyze within 40 days
TCLP Metals			Extract within 180 days, analyze within 180 days[g]

[a] When nonspecific container type is listed (e.g., 8-oz. wide-mouth glass jar), select a container appropriate to the volume and container requirement given. Samples for more than one parameter can be collected into a single container if container and preservation requirements are the same (e.g., sulfate and turbidity).
[b] Add 0.008% sodium thiosulfate ($Na_2S_2O_3$) in the presence of residual chlorine.
[c] Holding time for mercury is 28 days.
[d] Use ascorbic acid only is the sample contains residual chlorine greater than 0.2 mg/i. Test a drop of sample with potassium iodine-starch test paper; a blue color indicates need for treatment. Add ascorbic acid, a few crystals at a time, until a drop of sample produces no color on the indicator paper. Then add an additional 0.6 g of ascorbic acid for each L of sample volume.
[e] P = Plastic (polyethylene); G = Glass; BOD = Biological Oxygen Demand; ASAP = As Soon As Possible; NS = Not Specified
[f] Nutrients include nitrogen, phosphorus, chemical oxygen demand.
[g] TCLP Mercury maximum holding time is 28 days for extraction and 28 days for analysis.
[h] For Radiological Testing, the specific analyses will be defined as some or all of the following: Gross Alpha, Gross Beta, Uranium 233+ 234, 235 and 238, Americium 241, Plutonium 239+240, Tritium, Strontium 90, 89, Cesium 137, Radium 226, 228.
[i] Full suite, see footnote *h* above.
[j] Atterberg Limits include Liquid Limit, Plastic Limit, and Plasticity Index of Soils.
[k] The entire suite of analytical parameters can be performed on approximately 2-3 kilograms of material provided that the maximum grain diameter does not exceed 1-1/2 inches. Individually, the parameter test will require 500 grams of sample; therefore, use individual 500 gram samples if less than three of these parameters are requested for each sample.
[l] Grain Size Distribution includes Seive Analysis of Fine and Course Aggregates and Particle Size Analysis.
[m] Moisture includes Laboratory Determination of Water (Moisture) Content of Soil and Rocks.
[n] Thirty pounds of material is required.
[o] Shelby tubes may be replaced with three California liners or three 2.5 inch U-type samples.
[p] Direct Shear includes Soils Under Consolidated Drained Conditions. For Geosynthetic material collect a 12 inch x 12 inch sample.
[q] If samples contain residual chlorine, and measurements of the concentrations of disinfection by-products (trihalomethanes, etc.) at the time of the sample collection are desired, add about 25 mg of ascorbic acid to the sample bottle before filling.
[r] Volume required for any or all TCLP analyses.

TABLE A-3
SAMPLE CONTAINERS, SAMPLE PRESERVATION, AND SAMPLE HOLDING TIMES FOR GEOTECHNICAL SAMPLES

SOIL/GEOSYNTHETIC MATRIX

Parameter	Sample Volume/Container	Preservative	Holding Time
Geotechnical Parameters: Atterberg Limits [j], Grain Size Distribution (Particle Size) [l], Moisture [m], Specific Gravity, Visual Classification	One-gallon Zip-Loc Baggie [k] (500 grams per test if listed once)	None	28 days
Bulk Density (Proctor Test), Minimum (Maximum) Index Density	5-gallon Bucket [n]	None	6 mo
Compression: Unconfined Compressive: One-dimensional Consolidated; Unconsolidated Undrained Compressive, Direct Shear [p], Expansion Index	1-Shelby tube (3" diameter x 30" length) completely filled [o]	None	6 mo
Permeability: Saturated Hydraulic Conductivity (Constant Head); Saturated Hydraulic Conductivity (Constant Flow, Rate); Capillary Moisture Relationships; Relative Hydraulic Conductivity for Air	1-Shelby tube (3" diameter x 30" length) completely filled [o]	None	6 mo

[a] When nonspecific container type is listed (e.g., 8-oz. wide-mouth glass jar), select a container appropriate to the volume and container requirement given. Samples for more than one parameter can be collected into a single container if container and preservation requirements are the same (e.g., sulfate and turbidity).
[b] Add 0.008% sodium thiosulfate ($Na_2S_2O_3$) in the presence of residual chlorine.
[c] Holding time for mercury is 28 days.
[d] Use ascorbic acid only is the sample contains residual chlorine greater than 0.2 mg/l. Test a drop of sample with potassium iodine-starch test paper; a blue color indicates need for treatment. Add ascorbic acid, a few crystals at a time, until a drop of sample produces no color on the indicator paper. Then add an additional 0.6 g of ascorbic acid for each L of sample volume.
[e] P = Plastic (polyethylene); G = Glass; BOD = Biological Oxygen Demand; ASAP = As Soon As Possible; NS = Not Specified
[f] Nutrients include nitrogen, phosphorus, chemical oxygen demand.
[g] TCLP Mercury maximum holding time is 28 days for extraction and 28 days for analysis.
[h] For Radiological Testing, the specific analyses will be defined as some or all of the following: Gross Alpha, Gross Beta, Uranium 233+234, 235 and 238, Americium 241, Plutonium 239+240, Tritium, Strontium 90, 89, Cesium 137, Radium 226, 228.
[i] Full suite, see footnote *h* above.
[j] Atterberg Limits include Liquid Limit, Plastic Limit, and Plasticity Index of Soils.
[k] The entire suite of analytical parameters can be performed on approximately 2-3 kilograms of material provided that the maximum grain diameter does not exceed 1-1/2 inches. Individually, the parameter test will require 500 grams of sample; therefore, use individual 500 gram samples if less than three of these parameters are requested for each sample.
[l] Grain Size Distribution includes Seive Analysis of Fine and Course Aggregates and Particle Size Analysis.
[m] Moisture includes Laboratory Determination of Water (Moisture) Content of Soil and Rocks.
[n] Thirty pounds of material is required.
[o] Shelby tubes may be replaced with three California liners or three 2.5 inch U-type samples.
[p] Direct Shear includes Soils Under Consolidated Drained Conditions. For Geosynthetic material collect a 12 inch x 12 inch sample.
[q] If samples contain residual chlorine, and measurements of the concentrations of disinfection by-products (trihalomethanes, etc.) at the time of the sample collection are desired, add about 25 mg of ascorbic acid to the sample bottle before filling.
[r] Volume required for any or all TCLP analyses.

TABLE A-2 (continued)
SAMPLE CONTAINERS, SAMPLE PRESERVATION, AND SAMPLE HOLDING TIMES

SOIL MATRIX

[a] When nonspecific container type is listed (e.g., 8-oz. wide-mouth glass jar), select a container appropriate to the volume and container requirement given. Samples for more than one parameter can be collected into a single container if container and preservation requirements are the same (e.g., sulfate and turbidity).

[b] Add 0.008% sodium thiosulfate ($Na_2S_2O_3$) in the presence of residual chlorine.

[c] Holding time for mercury is 28 days.

[d] Use ascorbic acid only is the sample contains residual chlorine greater than 0.2 mg/i. Test a drop of sample with potassium iodine-starch test paper; a blue color indicates need for treatment. Add ascorbic acid, a few crystals at a time, until a drop of sample produces no color on the indicator paper. Then add an additional 0.6 g of ascorbic acid for each L of sample volume.

[e] P = Plastic (polyethylene); G = Glass; BOD = Biological Oxygen Demand; ASAP = As Soon As Possible; NS = Not Specified

[f] Nutrients include nitrogen, phosphorus, chemical oxygen demand.

[g] TCLP Mercury maximum holding time is 28 days for extraction and 28 days for analysis.

[h] For Radiological Testing, the specific analyses will be defined as some or all of the following: Gross Alpha, Gross Beta, Uranium 233+234, 235 and 238, Americium 241, Plutonium 239+240, Tritium, Strontium 90, 89, Cesium 137, Radium 226, 228.

[i] Full suite, see footnote *h* above.

[j] Atterberg Limits include Liquid Limit, Plastic Limit, and Plasticity Index of Soils.

[k] The entire suite of analytical parameters can be performed on approximately 2-3 kilograms of material provided that the maximum grain diameter does not exceed 1-1/2 inches. Individually, the parameter test will require 500 grams of sample; therefore, use individual 500 gram samples if less than three of these parameters are requested for each sample.

[l] Grain Size Distribution includes Seive Analysis of Fine and Course Aggregates and Particle Size Analysis.

[m] Moisture includes Laboratory Determination of Water (Moisture) Content of Soil and Rocks.

[n] Thirty pounds of material is required.

[o] Shelby tubes may be replaced with three California liners or three 2.5 inch U-type samples.

[p] Direct Shear includes Soils Under Consolidated Drained Conditions. For Geosynthetic material collect a 12 inch x 12 inch sample.

[q] If samples contain residual chlorine, and measurements of the concentrations of disinfection by-products (trihalomethanes, etc.) at the time of the sample collection are desired, add about 25 mg of ascorbic acid to the sample bottle before filling.

[r] Volume required for any or all TCLP analyses.

This is a CONTROLLED DOCUMENT
EG&G ROCKY FLATS PLANT
ENVIRONMENTAL MANAGEMENT
This is a RED Stamp

DOCUMENT MODIFICATION REQUEST (DMR)

PAGE 1 of 1

Refer to PAM-111-C-001 for Processing Instructions.
Print or Type All Information (Except Signatures).

1. Date	25. Dmc 2/15/95
2/7/95	DMR No. 95-DMR-00096

2. Existing Document Number/Revision	3. New Document Number or Document Number if it is to be changed with this Revision
5-21000-OPS-FO.3/Rev. 2	NA

4. Originator's Name/Phone/Pager/Location	5. Document Title
Craig Cowdery/6953/080	General Equipment Decontamination

6. Document Type: ☒ Procedure ☐ Other _____

7. Document Modification Type (Check only one): ☐ New ☐ Revision ☐ Intent Change ☒ Nonintent Change ☐ Editorial Correction ☐ Cancellation

8. Item	9. Page	10. Step	11. Proposed Modifications
1	18A	7.0	Change the last sentence of this paragraph to read: "Completion of equipment decontamination will be documented in a field logbook."

12. Justification (Reason for Modification, EJO #, TP #, etc.)

~~Limited application to OU8, OU9, OU10, OU12, OU13, OU14, and the Well Abandonment and Replacement Program.~~ DC 2/14/95

~~Form FO.3A was developed solely for decontamination of equipment at the decontamination pad and was not intended, nor should it be intended, for use at each field decontamination event.~~

Quality Control Entails Measure Performance of Decon. Process for Field Sampling Activities. RL

If modification is for a new procedure or a revision, list concurring disciplines in Block 13, and enter N/A in Blocks 14 and 15. If modification is for any type of change or a cancellation, organizations are listed in Block 13, then Concurror prints, and signs in Block 14, and dates in Block 15.

13. Organization	14. Print, Sign (if applicable)	15. Date (if applicable)
SME	Craig Cowdery Craig Cowdery	
~~Proj. Mgr.~~	DC 2-14-95	
QA	R. Stephen Luker	2-14-95

16. Originator's Supervisor (print/sign/date): Bruce D. Peterman 2/9/95 — No Training Required

17. Assigned SME/Phone/Pager/Location	18. Cost Center	19. Charge Number	20. Requested Completion Date	21. Effective Date
Craig Cowdery/6953/080			2/10/95	2/16/95

22. Accelerated Review? Yes ☐ No ☒ — 23. ORC Review: N/R

24. Responsible Manager (print,sign,date): Bruce D. Peterman 2/9/95

RF-47940 (5/93) received for distribution 2/15/95 Dmc

REVIEWED FOR CLASSIFICATION / UCNI
BY _____
DATE _____

APPENDIX E

EQUIPMENT DECONTAMINATION

DOCUMENT MODIFICATION REQUEST (DMR)

This is a CONTROLLED DOCUMENT 893

Refer to 1-A01-PPG-001 for Processing Instructions
Print or Type All Information (Except Signatures)

EG&G ROCKY FLATS PLANT
ENVIRONMENTAL MANAGEMENT DEPARTMENT

This is a RED Stamp

1. Date	25.
6/23/94	DMR. No. 94-DMR- 001224

Existing Document Number/Revision	3. New Document Number or Document Number if it is to be changed with this Revision
.1000-OPS-FO.03, Rev. 2	N/A

4. Originator's Name/Phone/Page/Location	5. Document Title
Colin Basye/6914/None/080	General Equipment Decontamination

6. Document Type ☒ Procedure ☐ Other _____

7. Document Modification Type (Check only one)
☐ New ☐ Revision ☒ Intent Change ☐ Nonintent Change ☐ Editorial Correction ☐ Cancellation

8. Item	9. Page	10. Step	11. Proposed Modifications
1	1		Add new subsection to the Table of Contents: 5.3.2 Cleaning Steel or Metal Sampling Equipment or Drill Stem in the Field Using Pressurized Steam.
2	9	5.3.2	Add the following Section and text as follows: "5.3.2 Cleaning Steel or Metal Sampling Equipment or Drill Stem in the Field Using Pressurized Steam Pressurized steam is to be used onsite to steam clean equipment such as: • Split spoon sampling equipment pieces • Drill stems • Other small luggable equipment pieces This method is to be used only when access is available to a self contained mobile station consisting of: • Steam/pressure generating unit • Curtained cleaning station that is open on one side only • Source of clean supply water to the generator unit • Used water collection system consisting of a drain in the bottom of the wash station leading to a gray water tank. The gray water tank is to be emptied at the decon pad when full or at least once per week. 1. Scrape gross contamination from the equipment into an IDM drum with other drill cuttings, before placing the equipment on the wash stand. 2. Place the equipment inside the curtained wash stand. 3. Ensure that none of the equipment to be washed extends out of the curtained area. 4. Clean the equipment thoroughly, rotating the piece to ensure that all surfaces are clean. 5. Ensure that all free water has drained from the equipment before removing from the wash stand.

12. Justification (Reason for Modification, EIO#, TP#, etc.)

The drilling and coring equipment that is used in the field is currently required to be decontaminated at the Decontamination Pad. Field Decontamination of drill stem and coring equipment will save time and reduce the contamination risks associated with transporting the equipment.

If modification is for a new procedure or a revision, list concurring disciplines in Block 13, and enter N/A in Blocks 14 and 15. If modification is for any type of change or a cancellation, organizations are listed in Block 13, then Concurrer prints, and signs in Block 14, and dates in Block 15.

13. Organization	14. Print and Sign (if applicable)	15. Date (if applicable)
EQS	Steve Luker/Mike Peters /s/ Signature on file	
SME	Roy Dearen	7-7-94

16. Originator's Supervisor (print/sign/date)
Kelly O'Neil/8665/5473/293-080 /s/Signature on File

17. Assigned SME/Phone/Page/Location	18. Cost Center	19. Charge Number	20. Requested Completion Date	21. Effective Date
Annette Schmiechen/3191/4484/T891B	243	ENV-FO	6/24/94	7/15/94

22. Accelerated Review? Yes ☐ No ☒

23. ORC Review
ORC Not Required - This non-intent change is being processed as an intent change to expedite the DMR process.

24. Responsible Manager (print, sign, date)
Annette Primrose/8618/4675/219-080 /s/Signature on File

REVIEWED FOR CLASSIFICATION/UCNI
BY NA
DATE NA

DOCUMENT CLASSIFICATION REVIEW WAIVER
PER HOFFMAN, CLASSIFICATION OFF

This is a DOCUMENT MODIFICATION REQUEST (DMR)

CONTROLLED DOCUMENT

ROCKY FLATS PLANT
DOCUMENT CONTROL DEPARTMENT

Refer to 1-A01-PPG-0016 for Processing Instructions.
Print or Type All Information (Except Signatures)

893

1. Date 5/23/94	25. DMR. No. 94-DMR- 001021

This is a RED Stamp

2. Existing Document Number/Revision 3, Rev. 2	3. New Document Number or Document Number if it is to be changed with this Revision N/A
4. Originator's Name/Phone/Page/Location Suzanne Berman Smith/8670/D4619080	5. Document Title General Equipment Decontamination

5-21000-OPS-FO.3, R2

6. Document Type ☒ Procedure ☐ Other _____

7. Document Modification Type (Check only one) Inc 5/23/94
☐ New ☐ Revision ☒ Intent Change ☒ Nonintent Change ☐ Editorial Correction ☐ Cancellation

8. Item	9. Page	10. Step	11. Proposed Modifications
1	18	Sec. 5.6.6	Add the following to the procedures:

Cleaning Procedures for Small Stainless Steel or Teflon® Equipment used to sample media possibly Containing Polychlorinated Biphenols (PCBs)

This procedure applies when equipment is cleaned in the field.

1. Using a hand held spray bottle, spray equipment with iso-octanol, or a solution of tap water and a non-phosphate laboratory detergent such as pipex or liquinox.
2. Thoroughly wipe equipment with a disposable cloth or other suitable material and discard properly.
3. Using a hand held spray bottle, spray equipment with tap water.
4. Thoroughly wipe equipment, properly discarding cloth.
5. Using a hand held spray bottle, spray equipment with distilled water.
6. Thoroughly wipe equipment, and properly discarding cloth.
7. If the equipment is not to be used immediately after decontamination then the equipment should be wrapped in plastic or aluminum foil.

12. Justification (Reason for Modification, EJO#, TP#, etc.)

Item No. 1 - Necessary to implement sampling in PCB contaminated areas with minimal TSCA liquid waste generation.

If modification is for a new procedure or a revision, list concurring disciplines in Block 13, and enter N/A in Blocks 14 and 15. If modification is for any type of change or a cancellation, organizations are listed in Block 13, then Concurrer prints, and signs in Block 14, and dates in Block 15.

13. Organization	14. Print and Sign (if applicable)	15. Date (if applicable)
RPM	Bruce Peterman for BDP	5/23/94
FOM	Maria Broussard	5/24/94
RE	Richard S. Bauma	5/25/94
IH	Lisa Nelowet M.D. Schuckenguest for L.N. Nelowet	5/25/94
EQS	Mark Brooks (RR)	5.25.94
FOM	Nick Demos for N Demos	5/25/94
DOE/RFFO	Steve Slaten	5/23/94

16. Originator's Supervisor (print/sign/date) B. D. Peterman for BDP 5/23/94

17. Assigned SME/Phone/Page/Location	18. Cost Center	19. Charge Number	20. Requested Completion Date	21. Effective Date
Richard S. Bauma/5565/D1070/T130C	243	989263-00	5/25/94	5-26-94

22. Accelerated Review?	23. ORC Review
Yes ☒ No ☐	Not Required

24. Responsible Manager (print, sign, date) B.D. Peterman for BDP 5/23/94

This non-intent change was processed as an intent change to expedite the AMR process. Inc 5/23/94

REVIEWED FOR CLASSIFICATION/UCNI
BY NA
DATE NA

DOCUMENT CLASSIFICATION REVIEW WAIVER
PER R.B. HOFFMAN, CLASSIFICATION OFFICE
JUNE 11, 1991

LIST OF EFFECTIVE PAGES

Pages	Effective Date	Change Number
1-2, 9-9A, 10	7/15/94	94-DMR-001224
18	5/26/94	94-DMR-001021
18A	02/16/95	95-DMR-000096

TOTAL NUMBER OF PAGES: 21 (including forms)

This is a
CONTROLLED DOCUMENT 893
EG&G ROCKY FLATS PLANT
ENVIRONMENTAL MANAGEMENT DEPARTMENT

This is a RED Stamp

GENERAL EQUIPMENT DECONTAMINATION

EG&G ROCKY FLATS PLANT	Manual:	5-21000-OPS
EMD FIELD PROCEDURES SOP	Procedure No.:	FO.3, Rev. 2
	Page:	1 of 18
	Effective Date:	7/15/94 Final
Category 2	Organization:	Environmental Management

TITLE:
GENERAL EQUIPMENT
DECONTAMINATION

Approved By:

/s/ J.E. Evered (Name of Approver) 5/12/94 (Date)

1.0 TABLE OF CONTENTS

94-DMD-00124

4.0 REFERENCES

4.1 SOURCE REFERENCES

Engineering Support Branch Standard Operating Procedures and Quality Assurance Manual. U.S. Environmental Protection Agency. Athens, GA. 1986.

Federal Register, Volume 44, 40 CFR Part 136, "Guidelines Establishing Test Procedures for the Analysis of Pollutants Under the Clean Water Act."

Test Methods for Evaluating Solid Waste. SW-846, 2nd Edition. U.S. Environmental Protection Agency. Washington, D.C. 1982.

Technical Enforcement Guidance Document (TEGD). EPA. 1986.

4.2 INTERNAL REFERENCES

Related SOPs cross-referenced in these procedures are as follows:

- SOP FO.4, Heavy Equipment Decontamination
- SOP FO.7, Handling of Decontamination Water and Washwater
- SOP FO.10, Receiving, Labeling, and Handling Environmental Materials Containers
- SOP GW.2, Field Measurement of Surface Water Field Parameters

5.0 PROCEDURES AND EQUIPMENT

5.1 INTRODUCTION

This procedure describes the method for physically removing contaminants. It applies to chemical and radioactive decontamination of equipment used in field investigations. All equipment must be cleaned before sample collection, decontaminated between samples, and decontaminated before being removed from the site.

Sufficient clean equipment should be transported to the field so that an entire study can be conducted without the need for field cleaning. However, this is not possible for some specialized items of field equipment (such as, well drilling rigs, soil coring rigs, and other large pieces of field equipment). In addition, during particularly large-scale studies, it may not be practical or possible to transport to the field all of the cleaned field equipment required, as steam cleaning is not always possible, it may be necessary to decon smaller metal and stainless steel equipment inside the exclusion zone (see 5.3.1) in order to have these items ready for repeated use (bailers, split spoons, etc.). This will decrease the need to travel to the MDF and decontaminate these items.

The following definitions apply to the cleaning procedures:

1. The laboratory detergent must be a standard brand of phosphate-free laboratory detergent, such as Liquinox or the equivalent.

2. Tap water is defined as RFP drinking water. It may be obtained from hydrants or the RFP fire department. The use of an untreated potable water supply is not an acceptable substitute for RFP drinking water.

The following are general comments:

- During cleaning operations, the substitution of a higher grade water (such as substituting distilled or organic-free water for tap water) is permitted and need not be noted as a variation.

- The brushes used to clean equipment as outlined in the various sections of this procedure must not be of the wire-wrapped type.

- Solvents, nitric acid solution, laboratory detergent, and rinse waters used to clean equipment must not be reused, except as specifically permitted.

- Field equipment or reusable sample containers needing cleaning must not be stored with clean equipment, sample tubing, or sample containers. Field equipment, reusable sample containers, disposable sample containers, and sample tubing that are not used may not be replaced in storage without being recleaned if these materials are transported to a facility or study site where contamination or suspected contamination was present.

- Previously cleaned sample containers and field equipment that are cleaned using the procedures outlined in the attachments will be stored in an area and manner that protects them from exposure to contaminants. Sample containers and field equipment will be stored separately from all other equipment and supplies, and from each other.

- Sample containers that contain a sample, regardless of the assumed or known level of hazard associated with that sample, must have all exterior surfaces decontaminated. For sample containers used in areas other than a controlled

access area, a wipedown with disposable rags or toweling, or rinse with distilled water followed by drying with disposable rags or toweling, will suffice. Any visible dirt, water droplets, stains, or other extraneous materials must be removed. For containers used in controlled access areas, a more rigorous cleaning and/or radiation monitoring may be required.

- Solvents, including water and mineral acids, used for equipment cleaning purposes other than as described in this SOP must be justified and approved by the responsible EG&G project personnel and will be documented in logbooks. The laboratory to which the samples are sent must be informed as well.

5.2 CLEANING PROCEDURES FOR TEFLON®, OR GLASS FIELD SAMPLING EQUIPMENT USED FOR THE COLLECTION OF SAMPLES FOR TRACE ORGANIC COMPOUNDS AND/OR METALS ANALYSES

When this sampling equipment is used to collect samples that contain oil, grease, or other hard-to-remove materials, it may be necessary to steam clean the field equipment before proceeding with Step 1. If the field equipment cannot be cleaned utilizing these procedures, it should be discarded.

1. Wash equipment thoroughly with laboratory detergent and tap water using a brush to remove any particulate matter or surface film.

2. Rinse equipment thoroughly with tap water.

3. Rinse equipment thoroughly with distilled water.

4. Wrap equipment with a non-reactive plastic to prevent contamination during storage and/or transport to the field.

5. If the equipment is not decontaminated immediately after use, rinse the Teflon® or glass sampling equipment thoroughly with tap water in the field as soon as possible after use.

5.3 CLEANING PROCEDURES FOR STAINLESS STEEL OR METAL SAMPLING EQUIPMENT

When this sampling equipment is used to collect samples that contain oil, grease, or other hard-to-remove materials, it may be necessary, in extreme cases, to steam clean or sandblast equipment before proceeding with Step 1. Any sampling equipment that cannot be cleaned using these procedures should be discarded. If necessary, rinsate sampling frequency and procedures are specified in the Task QAPP.

1. Scrape and then steam clean gross contamination if needed.

2. Wash equipment thoroughly with laboratory detergent and tap water and use a brush to remove any particulate matter or surface film.

3. Rinse equipment thoroughly with tap water.

4. Rinse equipment thoroughly with distilled water.

5. Wrap equipment with a non-reactive plastic to prevent contamination during storage and/or transport to the field.

6. If equipment is not decontaminated immediately after use, rinse the stainless steel or metal sampling equipment thoroughly with tap water in the field as soon as possible after use. This process will make later decontamination easier and will help prevent the spread of contamination.

5.3.1 **Cleaning Steel or Metal Sampling Equipment Without Steam in the Field**

1. Scrape gross contamination from equipment while in the exclusion zone.

2. Remove equipment from exclusion zone and wash in laboratory detergent and distilled water; a brush may be used for particulate residual.

3. Double rinse in distilled water.

4. Equipment may now either be wrapped in plastic to prevent cross-contamination or be re-used immediately.

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5.3.2 **Cleaning Steel or Metal Sampling Equipment or Drill Stem in the Field Using Pressurized Steam**

Pressurized steam is to be used onsite to steam clean equipment such as:

- Split spoon sampling equipment pieces
- Drill stems
- Other small luggable equipment pieces

This method is to be used only when access is available to a self contained mobile station consisting of:

- Steam/pressure generating unit
- Curtained cleaning station that is open on one side only

94-DMR-00133.4 94-DMR-00133.4

- Source of clean supply water to the generator unit
- Used water collection system consisting of a drain in the bottom of the wash station leading to a gray water tank. The gray water tank is to be emptied at the decon pad when full or at least once per week.

1. Scrape gross contamination from the equipment into an IDM drum with other drill cuttings, before placing the equipment on the wash stand.
2. Place the equipment inside the curtained wash stand.
3. Ensure that none of the equipment to be washed extends out of the curtained area.
4. Clean the equipment thoroughly, rotating the piece to ensure that all surfaces are clean.
5. Ensure that all free water has drained from the equipment before removing from the wash stand.

5.4 CLEANING PROCEDURES FOR AUTOMATIC DECONTAMINATION WATER SAMPLING EQUIPMENT

5.4.1 General

Automatic samplers will be cleaned as follows:

1. The exterior and accessible interior portions (excluding the waterproof timing mechanism) of automatic samplers will be washed with laboratory detergent and rinsed with tap water.

4. New precleaned, silastic pump tubing (see Subsections 5.5.1 and 5.5.2) will be installed.

5. When utilizing the samplers for collecting samples for metals and/or organic compounds analyses, all sampling train components that come in direct contact with the liquid sample must be of glass, Teflon®, or disposable silastic material.

5.4.2 Automatic Sampler Headers

1. Disassemble header and, using a bottle brush, wash with tap water and phosphate-free laboratory detergent.

2. Rinse thoroughly with distilled water.

3. Reassemble header, let dry thoroughly, and wrap with plastic.

5.4.3 Reusable Glass Composite Sample Containers

Under normal circumstances reusable glass containers are supplied clean by the laboratory. When this is not the case cleaning of reusable glass composite containers will be accomplished using the procedure below.

(Note: Glass composite containers used to collect in-process decontamination water samples at industrial facilities shall be discarded after sampling.) All materials will be disposed in accordance with SOP FO.10 Receiving, Labeling and Handling Environmental Materials Containers.

1. Scrub with liquinox or other phosphate-free laboratory detergent mixed with tap water.

2. Rinse with tap water.

3. Repeat step one.

4. Rinse in tap water again, and then in a triple-distilled water rinse.

5. Dry in inverted position on drain rack or suitable rack in clean room as is applicable.

6. If equipment is still discolored, spotted, or has a noticeable film or scale, discard in accordance with SOP FO.10, Receiving,, Labeling, and Handling Environmental Materials Containers.

5.4.4 Reusable Plastic Composite Sample Containers

Under normal circumstances reusable glass containers are supplied clean by the laboratory. When this is not the case use cleaning procedures as they are outlined in Subsection 5.4.3.

5.4.5 Sequential Sample Bottles (Automatic Sampler Base for Sequential Mode)

1. Use cleaning procedures as they are outlined in Subsection 5.4.3.

2. Replace bottles in covered, automatic sampler base; cover with plastic for storage.

5.4.6 Sequential Sample Bottles (Automatic Sampler Base for Sequential Mode) to be Used for Collecting Samples for Organic Compounds Analyses

Routinely, precleaned sample bottles will be purchased and used with automatic sampling devices.

1. Use cleaning procedures as they are outlined in Subsection 5.4.3.

2. Replace in covered, automatic sampler base; cover with plastic for storage and mark the base as follows: "Cleaned for organic analyses."

5.4.7 Bottle Siphons Used to Transfer Sample From Composite Container

1. Use a new siphon for each sampling location.

2. Use new 3/8-inch Teflon® tubing for samples collected for organic compounds analyses. The siphon and tubing should be flushed with sample thoroughly before use.

5.5 CLEANING PROCEDURES FOR SAMPLE TUBING

5.5.1 Silastic Rubber Pump Tubing Used in Automatic Samplers and Other Peristaltic Pumps

1. New tubing will be used for each automatic sampler set-up.

2. Teflon® tubing should be cleaned as follows:

   - The exterior will be hand scrubbed with a solution of a phosphate free, laboratory grade detergent and tap water, followed by rinsing with ample amounts of tap water by spraying. The tubing will then be triple rinsed thoroughly with approved distilled water by submerging or spraying.

   - Pump or pour laboratory detergent and water solution through tubing.

   - Pump approved distilled water through the tubing equivalent to 10 volumes of the tubing capacity.

5.5.2 Teflon® Sample Tubing

1. New Teflon® tubing should be used for each sampling point.
2. Teflon® tubing should be cleaned as follows using the procedures of Subsection 5.5.1.

5.5.3 Stainless Steel Tubing

1. Wash with laboratory detergent and tap water using a long, narrow, bottle brush.
2. Proceed with Steps 3.6 as outlined in Subsection 5.3.

5.5.4 Glass Tubing

Use new glass tubing, precleaned as follows:

1. Rinse thoroughly with distilled water.
2. Air dry.

3. Wrap tubing with plastic to prevent contamination.
4. Discard after use (see SOP FO.10, Receiving, Labeling, and Handling Environmental Materials Containers).

5.6 MISCELLANEOUS EQUIPMENT CLEANING PROCEDURES

5.6.1 Well Sounders or Tapes Used to Measure Groundwater Levels

The procedure applies when this equipment is cleaned in the field.

1. Wash with laboratory non-phosphorus detergent and tap water.
2. Rinse with distilled water.
3. Equipment should be wrapped with non-reactive plastic to prevent contamination during storage or transit.

5.6.2 Submersible Pumps and Hoses Used to Purge Groundwater Wells

Where appropriate, pumps or bailers will be employed to purge and sample groundwater monitoring wells. This equipment will be cleaned as follows:

1. The external surfaces of the equipment will be vigorously hand scrubbed with a solution of a phosphate- free, laboratory grade detergent and tap water, followed by rinsing with water by submerging or spraying. The equipment will then be triple rinsed thoroughly with approved distilled water.

2. Internal surfaces will be decontaminated by pumping a solution of non-phosphate detergent and water through the equipment.

3. Displace the soap solution immediately by pumping distilled water equivalent to 10 volumes of the pump storage capacity through the equipment.

5.6.3 Field Analytical Equipment and Other Field Instrumentation

The exterior of sealed, watertight equipment should be washed with a laboratory detergent and rinsed with tap water before storage. The interior of such equipment may be wiped with a damp cloth if necessary. Ensure that the equipment is dry prior to storage.

Other field instrumentation should be wiped with a clean, damp cloth; and pH meter probes, conductivity probes, dissolved oxygen (DO) meter probes, etc. should be rinsed with distilled water before storage.

If desiccant is present in flow meters or other equipment, it should be checked and replaced, if necessary, each time the equipment is cleaned.

For operations involving environmental or background samples, water quality sampling equipment (such as Kemmerers, buckets, DO dunkers, dredges, etc.) may be cleaned with distilled water between sampling locations. A brush may be used to remove deposits of material or sediment, if necessary. If distilled water is used, water samplers should be flushed with ambient water at the next sampling location before the sample is collected. It should be emphasized that these procedures can only be used to clean equipment used for the collection of background samples.

Flow measuring equipment (such as, weirs, staff gauges, velocity meters, and other stream gauging equipment) will be cleaned with tap water after use between measuring locations.

5.6.4 Ice Chests and Shipping Containers

All ice chests and reusable containers will be steam cleaned thoroughly inside and out at MDF. If an ice chest is so contaminated it cannot be decontaminated, dispose of it in accordance with SOP FO.10, Receiving, Handling, and Labeling Environmental Materials Containers.

5.6.5 Uncontaminated and Potentially Contaminated Drums

Gray drums used for the temporary containment of uncontaminated or potentially contaminated solid environmental materials or environmental liquids will require decontamination prior to any additional use. It may also be necessary to decontaminate the exterior of gray drums due to radiological contamination. The following procedures will be used:

- General Procedure
  - All general gray drum decontamination will be performed at the Main Decontamination Facility (MDF)
- Ensure the drums are empty.
- Scrape or shovel out any residual contaminants.
- Place drum in wash rack with open end down.
- Stand upwind/crosswind of the surface being decontaminated. If necessary the equipment will be reoriented inside the decontamination station to allow an upwind or crosswind position.

- General Decontamination

Thoroughly steam clean all surfaces of drum including lid, locking ring, bottom, and interior surface. A brush may be used for stubborn particulate matter.

- Place top of the drum down in a clean area where it will not come in contact with contaminants to dry.
- When dry, turn the drum upright and put the top and locking ring in place.
- Return the decontaminated drum to EG&G.

- Surface Radiologically Contaminated Drums

- Stand upwind/crosswind of the surface being decontaminated. If necessary the equipment will be reoriented inside the decontamination station to allow an upwind or crosswind position, or hand brushing will be used to complete decontamination.
- Steam clean all exterior surfaces including drum bottom.
- Remove the drum to a clean area where it will not come in contact with contaminants to dry.
- When the drum is dry, subcontractor personnel will monitor the drum for radiological contamination.
- If radiological contamination is still present, repeat decontamination as necessary.

- If verified free of radiological contamination by a Radiological Engineering-approved contractor Health and Safety Specialist, return the drum to the storage area.

5.6.6 Cleaning Procedures for Small Stainless Steel or Teflon® Equipment Used to Sample Media Possibly Containing Polychlorinated Biphenols (PCBs)

This procedure applies when equipment is cleaned in the field.

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1. Using a hand held spray bottle, spray equipment with iso-octanol, or a solution of tap water and a non-phosphate laboratory detergent such as pipex or liquinox.
2. Thoroughly wipe equipment with a disposable cloth or other suitable material and discard properly.
3. Using a hand held spray bottle, spray equipment with tap water.
4. Thoroughly wipe equipment, properly discarding cloth.
5. Using a hand held spray bottle, spray equipment with distilled water.
6. Thoroughly wipe equipment, and properly discarding cloth.
7. If the equipment is not to be used immediately after decontamination then the equipment should be wrapped in plastic or aluminum foil.

6.0 QUALITY ASSURANCE/QUALITY CONTROL

Quality Assurance (QA) and Quality Control (QC) activities will be accomplished according to applicable project plans as well as quality requirements presented in this SOP.

This section outlines guidelines for specific quality control procedures to monitor the effectiveness of cleaning procedures given in the attachments.

6.1 EQUIPMENT RINSE SAMPLES

The effectiveness of the equipment cleaning procedures is monitored by submitting to the laboratory rinse water for low-level analysis of the parameters of interest. Select different pieces of equipment for this procedure, each time equipment is washed, so that a representative sampling approximately 10 percent of all equipment is obtained over the length of the project. Distilled water is poured over the representative equipment. This water is captured directly into Sample bottles. If a funnel is needed, glass or Teflon® will be used.

7.0 DOCUMENTATION

95-AMR-000094

A permanent record of the implementation of this standard operating procedure (SOP) will be kept by documenting field observations and data. ~~Observations and data will be recorded on Form FO.3A, Equipment Decontamination/Wash Checklist and Record.~~ Completion of equipment decontamination will be documented in a field logbook.

EQUIPMENT DECONTAMINATION/WASH CHECKLIST AND RECORD

I. General Information completed by: _____

Name Date Phone No.

_____

Subcontractor's Name

NOTE: Sections I and II will be completed by the same individual.

Equipment Manufacturer, Model and Common Name: _____
Equipment Owner: _____
Name and Phone Number of Person Responsible for the Equipment: _____
Serial Number/Equipment Identification Number: _____
Delivered to Decontamination Station by: _____

Initial contaminate characterization of work area: (check one)
Not potentially contaminated _____
Potentially contaminated _____

II. Activity History

Where was equipment used? _____
What was equipment used for? _____
Types and volumes of water generated: (check as appropriate)

_____ Purge	_____ Gallons
_____ Development	_____ Gallons
_____ Decon/Wash	_____ Gallons
_____ Rinse	_____ Gallons

APPENDIX 3
Page 1 of 3

Page 1 of 1 **DOCUMENT MODIFICATION REQUEST (DMR)** 25. DMR No. 97-DMR-001155

Originator

1. Name/Phone/Pager/Location R. Mark Richards/5148/5886/T-130-B	2. Date 9/25/97
3. Existing Document Number and Revision 4-Q97-REP-1003 Revision 0	4. Document Type: ☐ Policy ☐ Manual ☐ Directive ☒ Procedure ☐ Instruction ☐ Job Aid ☐ Other _____
5. Document Title Radiological Evaluation for Unrestricted Release of Property/Waste	

6. Item	7. Page	8. Step	9. Proposed Modification
1	11	5.3 [6][A]	Change the language on this step to the following: "Use both the evaluated and approved signature lines for property releases."
2	11	5.3[6][B]	Delete 5.3 [6][B]

10. Item	10a. Justification (Reason for Modification, EJO#, TP#, etc.)
1 2	This language is being revised to reflect the guidance recieved from DOE/RFFO concerning the signature requirements for property.

11. ☒ Process (Complete Blocks 13-22) ☐ Do not Process (state reason in Block 10a) (print/sign/date) P. D. WORLEY / P. D. Worley / 9/26/97

12. Assigned SME/Phone/Pager/Location
R. Mark Richards/5148/5886/T-130-B

13. New Document/Rev. No. (if new or changed)
N/A

Complete either Section 14a or 14b, as applicable

14a. Type of Complete Modification
☐ New ☐ Revision ☐ Cancellation ☐ One-Time-Use

14b. Changes: (check the applicable boxes)
☐ Intent Change ☒ Nonintent Change ☒ Regular
☐ Editorial Correction ☐ Interim Approval Request - Needed for Immediate use (30-day limit for obtaining final approval)

Additional Attributes:
☐ Temporary ☐ One-Time-Use ☐ Limited Distribution

15. ERM Change Control Board Required: ☐ Yes ☐ No (Applicable only to new procedures, revisions, and intent changes)

List the reviewing organization in Block 16. After concurrence has been obtained on the Comment Sheet, enter the name of the reviewer followed by /s/ in block 17. If the reviewer indicated No comments, the review signature constitutes concurrence. Enter the date concurrence is obtained in Block 18.

16. Reviewing Org.	17. Name of Reviewer for that Organization	18. Date	16. Reviewing Org.	17. Name of Reviewer for that Organization	18. Date
SME		9/26/97			
Rad Eng.		9/26/97			

19. Prescreen/SES/USQD Number
not required

20. Independent Safety Review Meeting and Date
not Required.

21. ☐ Process Policy Action (This block required for Policies only) ☐ Do not Process (state reason in Block 10a)
Reviewed by V.P. w/ responsibility for the Policy Program (print/sign/date)

22. Approval Authority signs after obtaining ALL required signatures (print/sign/date) D. D. Nadler 9/26/97

23. Effective Date 9/26/97

RFPF - 1000.01 (5/95)
Formerly RF-47940

Page 1 of 2

Document Modification Request

Print or Type all information (except signatures). Process procedures in accordance with 1-A01-PROC DEV-400, Procedure Process

Originator

25. DMR No. 96-DMR-000456

1. Name/Phone/Pager/Location	2. Date
R. M. Richards/Page 5886/T690B	4/26/96
3. Existing Document Number and Revision	**4. Document Type:** ☒ Procedure ☐ Plan ☐ Other
4-Q97-REP-1003 Rev. 0	

5. Document Title: Radiological Evaluation for Unrestricted Release of Property/Waste

6. Item	7. Page	8. Step	9. Proposed Modification
1	11	5.3 [7]	Revise [7] to read: For waste releases, other than excess chemicals and batteries, place a completion blank on the P/WRE for the WEMS number in the property description section of Part I. • The WEMS number may be written in if not available when the P/WRE is prepared, but must be entered prior to approval of the P/WRE.

10. Item	10a. Justification (reason for modification, EJO #, TP #, etc.)
1-2	RMRS HAS CHANGED 90DAY ACCEPTANCE CRITERIA TO ELIMINATE WEMS NUMBERS FOR EXCESS CHEMICAL AND BATTERIES FOR LAB PACK OR REPACK. REP 1003 IS BEING MODIFIED TO REFLECT THIS CHANGE.

Originator's Supervisor

11. ☒ Process — (print/sign/date) B P Colby BP Colby 4/29/96
☐ Do not Process (state reason in Block 10a)

12. ☒ Process (Complete Blocks 13-22) — (print/sign/date) M. L. Littleton Michael L Littleton 4/29/96
☐ Do not Process (state reason in Block 10a)

13. New Document/Rev. No. (if new or changed)

Complete either Section 14a or 14b as applicable. For procedures, attach completed Procedure Modification Worksheet from 1-A01-PROC DEV-400.

14a. Type of Complete Modification: ☐ New ☒ Revision ☐ One-Time Use ☐ Cancellation

14b. Changes: (check all that apply.) ☐ Intent Change ☒ Non-intent Change ☐ Editorial Correction ☒ Regular ☐ Interim Approval Requested - Needed for Immediate Use (14-day limit for obtaining final approval)

Additional Attributes: ☐ Temporary ☐ One-Time-Use ☐ Limited Distribution

15. ERM Change Control Board Required: ☐ Yes ☐ No (Applicable only to new procedures, revisions, and intent changes)

List the reviewing disciplines in Block 16. After concurrence has been obtained (in accordance with 1-A01-PROC DEV-400), enter the name of the reviewer followed by /s/ in block 17. If the reviewer indicates *No comments*, the review signature constitutes concurrence. Enter the date concurrence is obtained in Block 18.

16. Organization	17. Reviewer/Concurror	18. Date	16a. Organization	17a. Reviewer/Concurror	18a. Date
SME	/S/ R. M. Richards	5/1/96			
Rad Eng Peer	/S/ J. B. Powell	4/30/96			

19. Assigned SME/Phone/Pager/Location	20. Cost Center	21. Charge Number	22. Requested Completion Date
R. M. Richards/5148/5886/T690B	T3168	8240150	

23. Prescreen/Screen/USQD Number	24. Independent Safety Review Meeting and Date
Safety Evaluation not required.	Independent Safety Review not required.

26. After obtaining ALL required signatures: Responsible Manager's Approval (print/sign/date) (Not required for New procedures or Revisions) M. L. Littleton Michael L Littleton 5-2-96

27. Effective Date 5/7/96

28. Expiration Date (if applicable)

DMR (continuation sheet)

Print or Type all information (except signatures). Process procedures in accordance with 1-A01-PROC DEV-400, Procedure Process

Originator

25. DMR No. 96-DMR-000456

3. Document Number/Revision: 4-Q97-REP-1003, Rev 0

5. Document Title: Radiological Evaluation for Unrestricted Release of Property/Waste

6. Item	7. Page	8. Step	9. Proposed Modification
2	11	5.3	Add the following text, as supplemental information, after Step [7]: Excess chemicals and batteries, transferred to 90 Day Storage Areas, Non-Regulated Storage Areas or RCRA Storage Units for consolidation or lab-pack require a Chemical Control System (CCS) number, unique identification number, or WEMS number. The CCS number, unique identification number, or WEMS number must be entered in the property description section of Part I of the P/WRE prior to approval of the P/WRE.

10. Item	10a. Justification (Reason for Modification)
	See first page.

26. After obtaining ALL required signatures: Responsible Manager's Approval (print/sign/date) (Not required for New procedures and Revisions)

M. L. Littleton / Michael L Littleton 5/2/96

RFPF - 1000.01 (5/95)
Formerly RF-47940

Page 1 of 1

Document Modification Request

Print or Type all information (except signatures). Process procedures in accordance with 1-A01-PROC DEV-400, Procedure Process

25. DMR No. 95-DMR-001264

Originator

1. Name/Phone/Pager/Location: R. S. Tyson/ X8172/D7982/ T690B
2. Date: 10/11/95
3. Existing Document Number and Revision: 4-Q97-REP-1003, Rev. 0
4. Document Type: ☒ Procedure ☐ Plan ☐ Other
5. Document Title: Radiological Evaluation for Unrestricted Release of Property/Waste

6. Item	7. Page	8. Step	9. Proposed Modification
1	8	5.2[C]	Delete the word "net", and remove the second set of parentheses and their contents.
2	8	5.2[D]	Delete the word "net".
3	8	5.2[E]	Replace the word "net" with "sample".
			Additional items added as results of the review process:
4	15 16	6 [5]	change title of 3-I27-RP-2001 to reflect current nomenclature.

10. Item	10a. Justification (reason for modification, EJO #, TP #, etc.)
1, 2 & 3	Revised to correct an error in the initial procedure issue with regards to comparison of sample activity to the MDA of the analysis.
4	Being procedure nomenclature to current study (Editorial Correction) in the title of the document

Originator's Supervisor

11. ☒ Process (print/sign/date) B P Colby B Kelly 10/12/95
☐ Do not Process (state reason in Block 10a)

12. ☒ Process (Complete Blocks 13-22) (print/sign/date) M. L. Littleton / Michael L Littleton 10/13/95
☐ Do not Process (state reason in Block 10a)

13. New Document/Rev. No. (if new or changed): N/A

Complete either Section 14a or 14b as applicable. For procedures, attach completed Procedure Modification Worksheet from 1-A01-PROC DEV-400.

14a. Type of Complete Modification: ☐ New ☐ Revision ☐ One-Time Use ☐ Cancellation

14b. Changes: (check all that apply.) ☐ Intent Change ☐ Non-Intent Change ☒ Editorial Correction ☐ Regular ☐ Interim Approval Requested - Needed for Immediate Use (14-day limit for obtaining final approval)

Additional Attributes: ☐ Temporary ☐ One-Time-Use ☐ Limited Distribution

15. ERM Change Control Board Required: ☐ Yes ☒ No (Applicable only to new procedures, revisions, and intent changes)

List the reviewing disciplines in Block 16. After concurrence has been obtained (in accordance with 1-A01-PROC DEV-400), enter the name of the reviewer followed by /s/ in block 17. If the reviewer indicates *No comments*, the review signature constitutes concurrence. Enter the date concurrence is obtained in Block 18.

16. Organization	17. Reviewer/Concurror	18. Date	16a. Organization	17a. Reviewer/Concurror	18a. Date
SME	/s/	10/11/95			
RCMI	/s/ E. R. Johnson	10/16/95			

19. Assigned SME/Phone/Pager/Location: R. S. Tyson / 8172 / DP 2982 / T690B
20. Cost Center: I3168
21. Charge Number: S240/510
22. Requested Completion Date:
23. Prescreen/Screen/USQD Number: Safety Evaluation not REQUIRED
24. Independent Safety Review Meeting and Date: Independent Safety Review not REQUIRED

26. After obtaining ALL required signatures: Responsible Manager's Approval (print/sign/date) (Not required for New procedures or Revisions): M. L. Littleton / Michael L Littleton 10/13/95

27. Effective Date: 10/24/95
28. Expiration Date (if applicable):

CONTROLLED COPY #49

Rocky Flats
Environmental Technology Site

4-Q97-REP-1003

REVISION 0

RADIOLOGICAL EVALUATION FOR UNRESTRICTED RELEASE OF PROPERTY/WASTE

APPROVED BY: Michael L Littleton M. L. Littleton 5/3/95

Manager, Radiological Engineering — Print Name — Date

Responsible Organization: Radiological Engineering Effective Date: 05/08/95

CONCURRENCE BY THE FOLLOWING DISCIPLINES IS DOCUMENTED IN THE PROCEDURE HISTORY FILE:

Radiological Control Manual Implementation
Radiological Engineering Support
Subject-matter Expert

USE CATEGORY 3

ORC review SORC-95-019 (05/02/95)

The following have been incorporated in this revision:
94-DMR-002305

Reviewed for Classification/UCNI

By

Date 5/3/95 UCNI

This procedure supersedes procedure 4-16100-REP-1003, Revision 1.

Periodic review frequency: 4 years from the effective date

LIST OF EFFECTIVE PAGES

Pages	Effective Date	Pages	Effective Date
1	05/08/95		
2	09/26/97		
3-7	05/08/95		
8	10/24/95		
9-10	05/08/95		
11	09/26/97		
11A	05/07/96		
12-14	05/08/95		
15-16	10/24/95		
17-21	05/08/95		

The following DMRs are active for this procedure:

97-DMR-001155

96-DMR-000456

95-DMR-001204

TABLE OF CONTENTS

1. PURPOSE

This procedure provides instructions for the evaluations for unrestricted release of property and waste from the Rocky Flats Environmental Technology Site.

This procedure contains requirements of Title 10 Code of Federal Regulations, Part 835 (10 CFR 835), Occupational Radiation Protection and DOE/EH-0256T, U. S. Department of Energy Radiological Control Manual and cannot be changed without the approval of the Radiological Control Department.

2. SCOPE

This procedure provides the Radiological Engineering (RE) methodology for evaluation of property and waste that requires a Property/Waste Release Evaluation (P/WRE).

This procedure is not the sole source of methodology for release of property or waste from Rocky Flats, and should not be the only procedure referred to when evaluating property or waste for unrestricted release. This procedure provides RE with the minimum guidelines and requirements for the performance and documentation of property/waste release evaluations (P/WREs).

This procedure does not apply to the release of volume or bulk solid materials.

This procedure covers the following topics:

- Initial Information
- Determination of Survey or Sampling Requirements
- Completion of the P/WRE Form
- P/WRE Log

This revision is a total rewrite and revision bars are omitted. This procedure supersedes 4-16100-REP-1003, Revision 1, and is designated Revision 0 because the procedure number has been changed.

3. OVERVIEW

Unrestricted release of property or waste from Rocky Flats requires that the property or waste be carefully surveyed and evaluated to prevent the release of DOE-controlled radioactive materials to the public. This procedure is an important part of such evaluations.

Property being released for unrestricted use must meet the criteria specified in DOE Order 5400.5, Radiation Protection of the Public and Environment. Waste being released for unrestricted use must meet the requirements of DOE Order 5400.5, plus the requirements of the No-Radioactivity-Added (NRA) Waste Verification program.

4. RESPONSIBILITIES

4.1 Radiological Engineering (RE)

Establishes radiological surveillance and sampling strategies to meet release criteria established in 1-P73-HSP-18.10, Radioactive Material Transfer and Unrestricted Release of Property and Waste, and 4-S23-ROI-03.02, Radiological Requirements for Unrestricted Release, for property/waste that requires a P/WRE.

Completes P/WRE forms and maintains a log of P/WRE activities.

5. INSTRUCTIONS

5.1 Initial Information

RE

[1] Review the P/WRE Request Form (see 1-P73-HSP-18.10) to determine whether sufficient information has been provided to enable an evaluation to be performed on the requested item(s).

[2] Request additional clarifying information about the property/waste, system, or equipment, as necessary, to establish its history.

Such information will be provided by the sender/custodian and should include, as appropriate, the following:

- Whether the item was stored or used in an Radioactive Material Management Area (RMMA) and the time intervals used in such areas
- Whether the item was opened or serviced while in RMMAs
- Design function of the item (does it process radioactive materials?)
- The radionuclides involved
- History prior to use at this site
- Property disposition, such as no longer used or serviceable
- Whether the item was involved with gases, chemicals, acids, and/or liquids.
- Whether the item was exposed to radiation beams capable of causing activation
- If property, what remaining value the item has

5.2 Determination of Survey or Sampling Requirements

RE

[1] Determine whether the P/WRE is to be Specific or Extended based on the information supplied by the sender/custodian.

Appendix 1 contains samples of P/WRE forms.

Extended P/WREs expire at the end of the calendar year in which they are written.

5.2 Determination of Survey or Sampling Requirements (continued)

Examples of items that may be release with Extended P/WREs are:

- Recycled paper (for example, paper that has multiple generation points across plant site and is generated continuously throughout the year)
- Inactive administrative records (for example, payroll records being archived to the Federal Records Center for long-term storage)

[2] **IF** the property/waste was **NOT** located, stored, or utilized in an RMMA or Radiological Area,
AND the property/waste has **NOT** contacted DOE-controlled radioactive materials while at Rocky Flats,
AND the property/waste has **NOT** been exposed to beams capable of causing activation,
THEN no radiological surveys are required (NSR) in accordance with DOE Order 5400.5, Radiation Protection of the Public and Environment, and the Rocky Flats Environmental Technology Site Radiological Control Manual (Site RCM).

[A] Use process knowledge and history as the primary method for releasing material in accordance with the NRA program.

[B] Completely document the process knowledge/history on the P/WRE or in a Property Release Log similar to the PRL provided in 4-S23-ROI-03.02.

[3] **IF** the conditions in Step [2] were **NOT** met based on process knowledge and history,
THEN choose the appropriate analytical methods to be used to determine whether the property/waste meets the limits for unrestricted release as specified in 1-P73-HSP 18.10.

Samples for radioactive purposes may be performed concurrently with waste samples for hazardous waste characterization.

5.2 Determination of Survey or Sampling Requirements (continued)

[A] Use statistical sampling procedures to determine the sample size for significant quantities of property/waste (e.g., 5000 pallets, 700 batteries, 1000 pieces of sheetmetal, etc.).

The quantity in the sample size must be selected to provide a 95% confidence factor that no more than 1% of the items in the population could exceed the radiological limits for unrestricted release as specified in 1-P73-HSP-18.10. Military Standard 105E, Sampling Procedures and Tables for Inspection by Attributes, or other industry accepted statistical methods may be used for this determination.

[B] Specify analysis for gross alpha and gross beta in accordance with the NRA Program as the secondary method for releasing homogeneous liquid samples that are not believed to be radioactively contaminated.

[C] Evaluate the sample results and compare the minimum detectable activity (MDA) to the sample activity.

[D] IF the activity results for alpha and beta, excluding the accuracy band, are less than the corresponding MDA values, respectively,
THEN the property/waste meets the requirements for unrestricted release, and should be managed as such.

[E] IF the sample activity results are greater than the corresponding MDA values,
THEN the property/waste is radioactively contaminated, and should be managed as Low Level Radioactive Waste.

95-DMR-001204 95-DMR-001204

5.2 Determination of Survey or Sampling Requirements (continued)

[4] IF items have coatings, such as rust, grease, or other surface conditions that may prevent accurate detection of surface contamination,
THEN provide specific guidance, such as:

- Pre-survey cleaning/equipment preparation methods
- Use of special survey equipment, such as a small area detector, gamma or alpha spectroscopy
- Core samples of material
- Scrapings of material, such as paint, concrete, or wood

[5] IF an item has surfaces which are NOT readily accessible,
THEN provide more detailed survey requirements, as necessary, to ensure that sufficient representative surfaces are surveyed to enable release of the item.

This category of items may be released after a case-by-case evaluation and documentation based on both the history of its use and available measurements demonstrate that the unsurveyable surfaces are likely to be within the limits specified in 1-P73-HSP 18.10.

NOTE *Occasionally, systems and/or major pieces of installed equipment may require evaluation.*

[6] IF a system or major piece of installed equipment is to be evaluated,
THEN:

[A] Investigate the history of the system or equipment use, paying close attention to interfaces and isolations the system or equipment could have had with radioactive materials.

[B] Identify all potential points-of-concentration where it would be reasonable to expect radioactivity to be concentrated (filters, sumps, sediment traps, low point drains, etc.).

[C] Specify the type and scope of necessary surveys.

5.3 Completion of the P/WRE Form

All changes to a P/WRE are made by changing the information in the original computer file and reprinting the P/WRE. Waste Environmental Management System (WEMS) numbers or waste container numbers are the only handwritten information allowed on P/WREs.

RE

[1] Designate a P/WRE number using the "date-building/location designator-serial number" format, where:

- The date is a six digit number reflecting the date the P/WRE was written (940901 = September 1, 1994).
- The building designator is for that building/location where the P/WRE log is maintained (e.g., T452G, 707, 904 Pad, Solar Ponds, etc.).
- The serial number is the sequential number for P/WREs created that day.

Examples: 940102-T690B-01, 940110-Solar Ponds-07, 940123-707-15.

NOTE *The length of time an extended P/WRE is valid, for up to one calendar year, is at the discretion of the RE issuing the P/WRE.*

[2] IF the P/WRE is to be Extended,
THEN:

[A] Mark the "Extended" box.

[B] Enter the expiration date as appropriate, but NOT later than December 31st of the current calendar year.

[3] Enter the information provided by the sender/custodian onto Part I of the P/WRE.

[4] Specify the surveys and/or analyses required as applicable, or specify No Surveys Required in Part II of the P/WRE.

[A] Document the process knowledge and history used to support this decision as required by DOE Order 5400.5 and the Site RCM.

5.3 Completion of the P/WRE Form (continued)

[5] Document any other requirements necessary to complete the release in Part II of the P/WRE.

[6] Document the appropriate evaluation and/or approval signature lines at the end of Part II as provided below (see Appendix 1 for examples):

97-DWR-001155

[A] Use both the evaluated and approved signature lines for property release.

~~[B] Use both the evaluated and approved signature lines for property evaluated as requiring surveys.~~

For property releases, the two signatures may be signed by the same individual.

The Evaluation signature validates the P/WRE for the RCTs performing the surveys; the Approval signature is signed only after the sender/custodian has signed the P/WRE, all survey and analysis results have been reviewed, and the RE is satisfied that the item meets the requirements for unrestricted release.

[C] Use both the evaluated and approval signature lines for waste releases.

- For waste releases, two separate REs must sign the signature lines.

This requirement is to provide a peer review of the P/WRE due to the additional regulatory criteria associated with waste, ensuring that all requirements have been satisfied prior to the item being released for unrestricted use. This approval must be provided by an RE qualified to the DOE Performance Objectives requirements.

96-DWR-000456

[7] For waste releases, other than excess chemicals and batteries, place a completion blank on the P/WRE for the WEMS number in the property description section of Part I.

- This number may be written in if not available when the P/WRE is prepared, but must be entered prior to approval of the P/WRE.

5.3 Completion of the P/WRE Form (continued)

96-DMR-000456

Excess chemicals and batteries, transferred to 90 Day Storage Areas, Non-Regulated Storage Areas or RCRA Storage Units for consolidation or lab-pack require a Chemical Control System (CCS) number, unique identification number, or WEMS number. The CCS number, unique identification number, or WEMS number must be entered in the property description section of Part I of the P/WRE prior to approval of the P/WRE.

5.3 Completion of the P/WRE Form (continued)

[8] Notify the sender/custodian that the P/WRE is ready for signature and pickup.

[A] Have the sender/custodian review the information in Part I of the P/WRE.

[B] Make any corrections required.

[C] Have the sender/custodian sign the P/WRE adjacent to their name.

[9] IF the P/WRE is for property with no surveys required,
THEN:

[A] Sign the P/WRE approving the release

[B] Make a copy of the P/WRE

[C] Stamp the copy, COPY

[D] Give the copy to the sender/custodian.

[10] IF both the evaluated and approval signatures are required on the P/WRE,
THEN:

[A] Sign the Evaluated by signature line.

[B] Make a copy of the P/WRE.

[C] Stamp the copy, COPY.

[D] IF the P/WRE is for waste with no surveys required,
THEN go to Step [13].

[E] Give the copy to the sender/custodian.

[F] Instruct the sender/custodian to contact Radiological Operations (RO) for performance of surveys.

5.3 Completion of the P/WRE Form (continued)

[11] WHEN the sender/custodian returns the P/WRE with surveys,
THEN review the surveys for completeness and compliance with the acceptance criteria in HSP-18.10.

[12] IF the survey results do NOT meet the acceptance criteria,
THEN:

[A] Notify RO of the concerns with the surveys

[B] Have the sender/custodian return the surveys to RO.

[13] IF the survey results meet the acceptance criteria provided in HSP-18.10,
OR no surveys are required,
THEN sign the Approved by signature line, or have the approval signature line signed by another Radiological Engineer (as required by Step [6][C] above).

[14] WHEN all signatures have been completed:
THEN:

[A] Provide the sender/custodian with a stamped copy of the completed P/WRE.

[B] Retain the original P/WRE and a copy of the surveys and/or analyses (if performed) in the office files.

5.4 P/WRE Log

NOTE 1 — *This Log is used for information purposes only, and to assist in the proper numbering of the P/WREs. The Log contains at a minimum; P/WRE number, Radiological Engineer's name (signature is not required), a description of the property/waste, the current location of the item and the destination of the item.*

NOTE 2 *The P/WRE number is building specific; however, several buildings may use one Log. That is, lump sum area P/WREs may be numbered and issued from one log while Building 707 may keep its own log.*

NOTE 3 *Other RE personnel may use this log as an aid to tracking P/WREs and to assist in P/WRE retrievability.*

RE

[1] Maintain a Property/Waste Release Log, Appendix 2, for tracking and retrievability purposes. Only one log is maintained at each issue point.

[2] Enter the following information in the Log:

- The assigned P/WRE number
- Requestor Name/Phone/Page
- Current location of the property/waste
- Destination of property/waste
- A description of the property/waste
- Name of the RE preparing/processing the P/WRE
- Charge number for activity authorizing work (may be marked N/A if appropriate)

6. RECORDS

Appendix 1 is a Quality Assurance Record.

RE

[1] Forward a copy of the P/WRE to the Sender/Custodian. The copy shall be designated as such by the use of the blue COPY stamp on the sheet.

[2] Retain the original P/WRE and reviewed, approved radiological surveys, as applicable, in the RE files.

[3] File the completed P/WRE with radiological surveys by building/area/year - building/area-month-year, or similar easily retrievable methods.

[4] Maintain one calendar year's P/WREs on file for retreivability.

[5] Maintain records and logbooks in accordance with 1-77000-RM-001, Records Management Guidance for Records Sources, and 3-I27-RP-2001, Guidance for Management of Records in Radiological Control.

[6] Perform internal audits of RE records as required by the Performance Objective for Certification of Non-Radioactive Hazardous Waste.

95-SMR-00 1204

7. REFERENCES

DOE/EH-256T, Radiological Control Manual

DOE Order 5400.5, Radiation Protection of the Public and Environment

Military Standard 105E, Sampling Procedures and Tables for Inspection by Attributes

No-Radioactivity-Added (NRA) Waste Verification Program

Performance Objective for Certification of Non-Radioactive Hazardous Waste

Rocky Flats Radiological Control Manual

1-P73-HSP-18.10, Radioactive Material Transfer and Unrestricted Release of Property and Waste

1-77000-RM-001, Records Management Guidance for Records Sources

3-I27-RP-2001, Guidance for Management of Records in Radiological Control

4-S23-ROI-03.02, Radiological Requirements for Unrestricted Release

10 CFR 835, Occupational Radiation Protection

95-DMR-00120f

APPENDIX 1

Page 1 of 4

SAMPLE P/WRE FORMS

PROPERTY/WASTE RELEASE EVALUATION
(for property with no surveys required [NSR])

PRE Number: 120594-T690B-003 Charge Number: TH063328

EXTENDED: EXPIRES:

PART I SENDER/CUSTODIAN

Description of Property/Waste To Be Released/Transferred:	Six (6) Air sampling cassettes for samples taken during Asbestos ripout work. Sample numbers: 111-94-12-030-70-01 thru 06.
Property's Current Location:	Building T452G.
Property's Destination:	Reservoir Labs, Denver Co.
Property's New Recipient/Custodian:	Reservoir Labs.
Property History/Process Knowledge:	These samples were taken during asbestos ripout work performed in Bldg 111.
Has the specified property/waste ever been in an RMMA/RCA or contacted DOE controlled radioactive materials?	NO

ACKNOWLEDGEMENT:

By signing below, the sender/custodian verifies the information above to be true and correct.

Sender/Custodian:_____ Emp.No.:_____ Date:_____ Ext:_____ Pager:_____

PART II RADIOLOGICAL ENGINEERING

No Radiological Survey is required due the property's location, history, and/or characteristics

SPECIFIC REQUIREMENTS AND/OR COMMENTS:

These air samples were taken during work being performed in Bldg 111, which has been evaluated as a non-RMMA/non-RCA in accordance with REP-1108; therefore, they are non-radioactive.

APPROVAL FOR TRANSFER/SHIPMENT

The property may be released to the recipient indicated in Part I.

Approved:_____ Emp.No.:_____ Date:_____ Ext.:_____ Pager:_____

RE

APPENDIX 1

Page 2 of 4

PROPERTY/WASTE RELEASE EVALUATION
(for property with surveys required)

PRE Number: 120594-T690B-008 Charge Number: 98317600

EXTENDED: EXPIRES:

PART I SENDER/CUSTODIAN

Description of Property/Waste To Be Released/Transferred:	Leach, winch, Stranspec Rightway, ERP 25-20, Base Mounted Electrical Car Puller, 2000# Capacity, 25 FPM line speed, S/N 25567-w8, on a pallet (2 Each) and associated miscellaneous parts in boxes
Property's Current Location:	Bldg 551
Property's Destination:	Len York and Associates, 8541 Franklin, Denver Co 80229-0076
Property's New Recipient/Custodian:	Len York
Property History/Process Knowledge:	This equipment was ordered and received on TM051489 E00381, and shipped to the zone and then shipped to Broomfield Warehouse. It has since returned to 551 to be shipped to a vendor for testing and certification
Has the specified property/waste ever been in an RMMA/RCA or contacted DOE controlled radioactive materials?	YES

ACKNOWLEDGEMENT:

By signing below, the sender/custodian verifies the information above to be true and correct.

Sender/Custodian:_____ Emp.No.:_____ Date:_____ Ext.:_____ Pager:_____

PART II RADIOLOGICAL ENGINEERING

Radiological Survey for removable and total contamination:

1. **Alpha**
2. **Beta/gamma**

SPECIFIC REQUIREMENTS AND/OR COMMENTS:

The Radiological Control Technician (RCT) shall perform a random survey of each component for unrestricted release as per ROI 3.02 on this property. The RCT shall provide a copy of the completed Radiological Contamination Survey Form to the Sender/Custodian.

The Sender/Custodian shall return the completed Survey Form(s) and the P/WRE to Radiological Engineering for approval.

Evaluated:_____ Emp.No.:_____ Date:_____ Ext.:_____ Pager:_____
RE

APPROVAL FOR TRANSFER/SHIPMENT

The property may be released to the recipient indicated in Part I.

Approved:_____ Emp.No.:_____ Date:_____ Ext.:_____ Pager:_____
RE

APPENDIX 1

Page 3 of 4

PROPERTY/WASTE RELEASE EVALUATION

(for waste with no surveys required [NSR])

PRE Number: 120594-T690B-009 Charge Number: 98138505

EXTENDED: EXPIRES:

PART I SENDER/CUSTODIAN

Description of Property/Waste To Be Released/Transferred:	34 Spent Light Bulbs that have been used in bldg 770 WEMS #: N03511
Property's Current Location:	Building 771 Room 137
Property's Destination:	Building 569
Property's New Recipient/Custodian:	Rosalie Chavez X2310/ D7710
Property History/Process Knowledge:	This material has never been in a RCA/ nor a RMMA
Has the specified property/waste ever been in an RMMA/RCA or contacted DOE controlled radioactive materials?	NO

ACKNOWLEDGEMENT:

By signing below, the sender/custodian verifies the information above to be true and correct.

Sender/Custodian: _____ Emp.No.: _____ Date: _____ Ext: _____ Pager: ____

PART II RADIOLOGICAL ENGINEERING

No Radiological Survey is required due the waste's location, history, and /or characteristics

SPECIFIC REQUIREMENTS AND/OR COMMENTS:

This waste was generated in Bldg 771, Rm 137 which has been evaluated as a non-RMMA/non-RCA in accordance with REP-1108; therefore, it is non-radioactive.

Evaluated: _____ Emp.No.: _____ Date: _____ Ext.: _____ Pager: _____
RE

APPROVAL FOR TRANSFER/SHIPMENT

The waste may be released to the recipient indicated in Part I.

Approved: _____ Emp.No.: _____ Date: _____ Ext.: _____ Pager: _____
RE

APPENDIX 1

Page 4 of 4

PROPERTY/WASTE RELEASE EVALUATION

(for waste with surveys required)

PRE Number: 101894-T690B-005 Charge Number: 81206100

EXTENDED: EXPIRES:

PART I SENDER/CUSTODIAN

Description of Property/Waste To Be Released/Transferred:	Six Aerosol Cans and four (4) bottles with factory seals intact.
Property's Current Location:	Building 121, Room 109
Property's Destination:	RCRA Unit One
Property's New Recipient/Custodian:	RWO
Property History/Process Knowledge:	The aerosol cans are pressurized.
Has the specified property/waste ever been in an RMMA/RCA or contacted DOE controlled radioactive materials?	UNKNOWN

Sender/Custodian: _____ Emp.No: _____ Date: _____ Ext.: _____ Pager: _____

PART II RADIOLOGICAL ENGINEERING

Radiological Survey for removable and total contamination:

1. Alpha
2. Beta/gamma

SPECIFIC REQUIREMENTS AND/OR COMMENTS:

The Radiological Control Technician (RCT) shall perform a Representative survey for unrestricted release per ROI 3.02. The RCT shall provide a copy of the completed Radiological Contamination Survey Form to the Sender/Custodian.

The Sender/Custodian shall return the completed Survey Form(s) and the P/WRE to Radiological Engineering for approval.

Evaluated: _____ Emp.No.: _____ Date: _____ Ext.: _____ Pager: _____

RE

APPROVAL FOR TRANSFER/SHIPMENT

The waste may be released to the recipient indicated in Part I.

Approved: _____ Emp.No.: _____ Date: _____ Ext.: _____ Pager: _____

RE

APPENDIX 3
Page 1 of 3

Page 1 of 1 **DOCUMENT MODIFICATION REQUEST (DMR)**

Originator

25. DMR No. 97-DMR-000918

1. Name/Phone/Pager/Location: R. Mark Richards/5148/5886/T130B

2. Date: 7/28/97

3. Existing Document Number and Revision: 4-S23-ROI-03.02, Revision 1

4. Document Type: ☐ Policy ☐ Manual ☐ Directive ☑ Procedure ☐ Instruction ☐ Job Aid ☐ Other _____

5. Document Title: Radiological Requirements for Radioactive Material Transfer and Unrestricted Release

6. Item	7. Page	8. Step	9. Proposed Modification
1	18	8.	Delete Appendices 2, 3 and 4 from this procedure as a Qualtiy Assurance Record (QAR).
2	21	Appendix 2	Modify Ram Tag/Label (RFP-5820.27) to meet the newly revised RFP-5820.27 labels being implemented.

10. Item	10a. Justification (Reason for Modification, EJO#, TP#, etc.)
1	The Radioactive Material (RAM) Tag/Label (RFP 5820.27), Radioactive Material Transfer Tag (RFP-5822.03) and Material Transfer and Disposal Form (RF-47555) are used by various Site organizations to provide guidance concerning the radiological condition of a waste, property or material however, these forms do not require retention as a Radiological Safety QAR.
2	The RAM Tag/label was revised to reflect only those items necessary to be on the form (RFP-5820.27). Therefore, the Caution Radioactive Material label/tag depicted in the procedure will be the same being implemented on-site.

11. ☑ Process (Complete Blocks 13-22) ☐ Do not Process (state reason in Block 10a) P. D. Worley / (print/sign/date) P. D. Worley / 7/28/97

12. Assigned SME/Phone/Pager/Location: R. Mark Richards/5148/5886/T130B

13. New Document/Rev. No. (if new or changed): N/A

Complete either Section 14a or 14b, as applicable

14a. Type of Complete Modification: ☐ New ☐ Revision ☐ Cancellation ☐ One-Time-Use

14b. Changes: (check the applicable boxes) ☐ Intent Change ☑ Nonintent Change ☐ Regular ☐ Editorial Correction ☑ Interim Approval Request - Needed for Immediate use (30-day limit for obtaining final approval)

Additional Attributes: ☐ Temporary ☐ One-Time-Use ☐ Limited Distribution

15. ERM Change Control Board Required: ☐ Yes ☐ No (Applicable only to new procedures, revisions, and intent changes)

List the reviewing organization in Block 16. After concurrence has been obtained on the Comment Sheet, enter the name of the reviewer followed by /s/ in block 17. If the reviewer indicated No comments, the review signature constitutes concurrence. Enter the date concurrence is obtained in Block 18.

16. Reviewing Org.	17. Name of Reviewer for that Organization	18. Date	16. Reviewing Org.	17. Name of Reviewer for that Organization	18. Date
SME/STE	RM. RICHARDS	9/28/97			
Rad Eng.	(SAME AS ABOVE)				
RadSec 371	/S/ J. Vogel	7/31/97			
RadSec Dyn/RM	/S/ P.L. Hapke	7/29/97			
RadSec 559/707	/S/ D. Davidson	7/30/97			
RadSec 776/777	/S/ G. T. Chandler	7/30/97			
RadSec 771/774	/S/ K. Harrawood	7/30/97			

19. Prescreen/SES/USQD Number: not required.

20. Independent Safety Review Meeting and Date: not required.

21. ☐ Process Policy Action (This block required for Policies only) ☐ Do not Process (state reason in Block 10a)

Reviewed by V.P. w/ responsibility for the Policy Program (print/sign/date)

22. Approval Authority signs after obtaining ALL required signatures (print/sign/date) P. D. Worley / P. D. Worley / 8/1/97

23. Effective Date 08/01/97

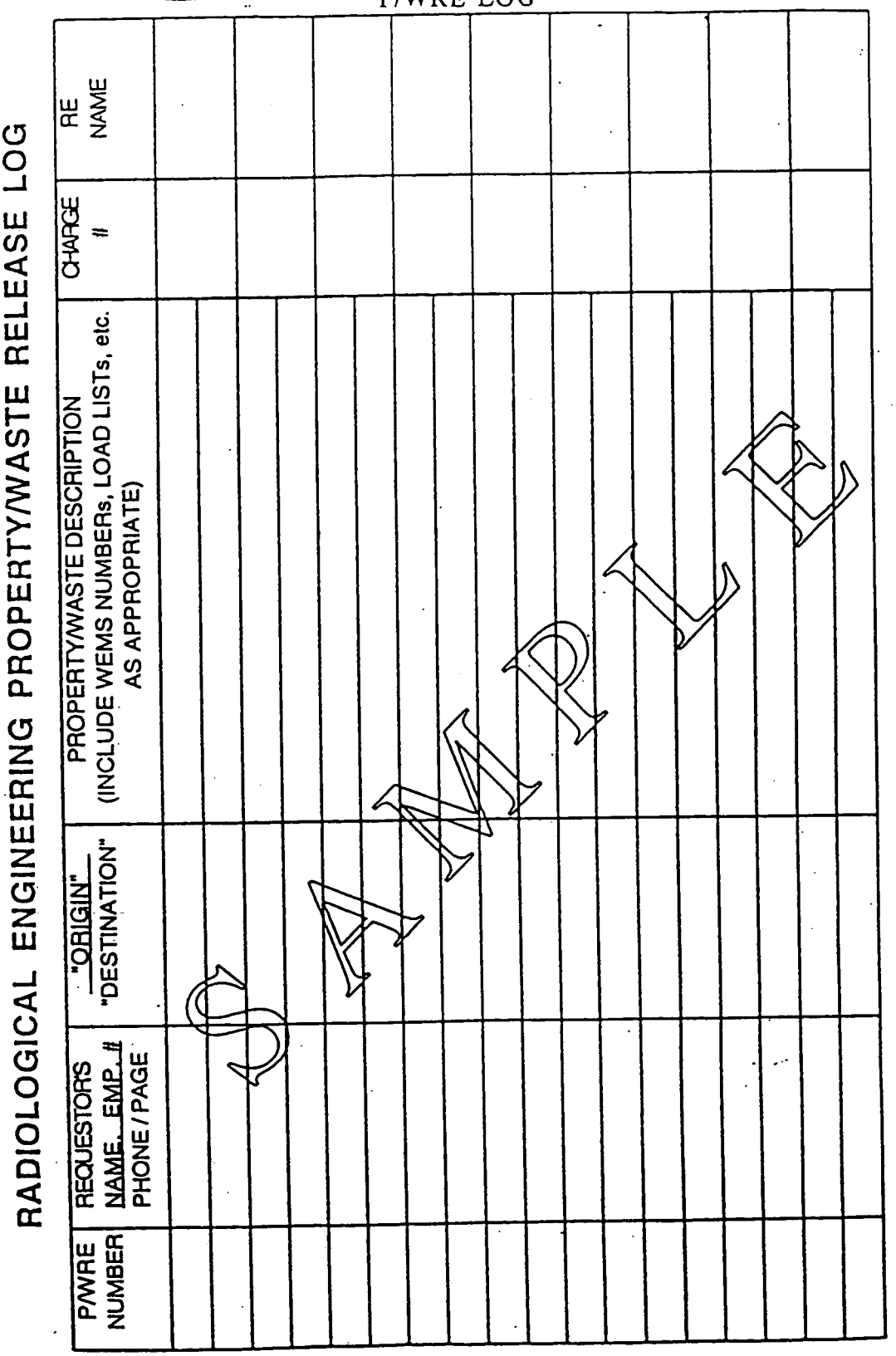
24. Expiration Date

Records to be Protected

APPENDIX 2

Page 1 of 1

P/WRE LOG



APPENDIX 3

Page 1 of 3

Page 1 of 1 **DOCUMENT MODIFICATION REQUEST (DMR)**

Originator — *Print or Type all information (except signatures)*

25. DMR No. 97-DMR-000195

1. Name/Phone/Pager/Location: R. S. Tyson / 8172 / /T690B

2. Date: 2/27/97

3. Existing Document Number and Revision: 4-S23-ROI-03.02 / Rev. 1

4. Document Type: ☐ Policy ☐ Manual ☐ Directive ☑ Procedure ☐ Instruction ☐ Job Aid ☐ Other _____

5. Document Title: Radiological Requirements for Radioactive Material Transfer and Unrestricted Release

6. Item	7. Page	8. Step	9. Proposed Modification
1	2	LOEP	Modify List of Effective Pages (LOEP) to match attached affected pages.
2	12	7.1	Insert the following text to the end of the second paragraph: "The old Radioactive Material tags/labels (RF# 46751), that are currently installed, shall remain valid until the presently documented surveys expire."

10. Item — 10a. Justification (Reason for Modification, EJO#, TP#, etc.)

1- LOEP changes are documented per Site Documents Requirements Manual.

2- Changing labels/tag is unnecessary duplication of work and wasted resources, and should only be done when the surveys are no longer valid, the label/tags have been defaced or no longer readable, or the labels/tags have insufficient information to identify the material, etc. Therefore, the old Radioactive Material tags/labels RF#46751 are still valid as long as the surveys are still valid.

Responsible manager

11. ☑Process (Complete Blocks 13-22) ☐ Do not Process (state reason in Block 10a) P. D. Worley / P D Worley (print/sign/date) 2/27/97

12. Assigned SME/Phone/Pager/Location: R. S. Tyson / 8172 / / T690B

13. New Document/Rev. No. (if new or changed): N/A

Complete either Section 14a or 14b, as applicable

14a. Type of Complete Modification: ☐ New ☐ Revision ☐ Cancellation ☐ One-Time-Use

14b. Changes: (check the applicable boxes) ☐ Intent Change ☑Nonintent Change ☑Regular ☐ Editorial Correction ☐ Interim Approval Request - Needed for Immediate use (30-day limit for obtaining final approval)

Additional Attributes: ☐ Temporary ☐ One-Time-Use ☐ Limited Distribution

15. ERM Change Control Board Required: ☐ Yes ☐ No (Applicable only to new procedures, revisions, and intent changes)

List the reviewing organization in Block 16. After concurrence has been obtained on the Comment Sheet, enter the name of the reviewer followed by /s/ in block 17. If the reviewer indicated No comments, the review signature constitutes concurrence. Enter the date concurrence is obtained in Block 18.

16. Reviewing Org.	17. Name of Reviewer for that Organization	18. Date	16. Reviewing Org.	17. Name of Reviewer for that Organization	18. Date
SME	P D Worley	2/27/97			
Rad Eng	P D Worley	2/27/97			
Rad Trng.	H Williams for J. C. Smith	2/27/97			

19. Prescreen/SES/USQD Number: Not Required

20. Independent Safety Review Meeting and Date: Not required.

VP of H&S

21. ☐ Process Policy Action (This block required for Policies only) ☐ Do not Process (state reason in Block 10a)

Reviewed by V.P. of Health & Safety (print/sign/date)

22. Approval Authority signs after obtaining ALL required signatures (print/sign/date): P. D. Worley / P D Worley / 2/27/97

23. Effective Date: 2/27/97

24. Expiration Date:

REVIEWED FOR CLASSIFICATION By R. S. Cichorz U/NM

Rocky Flats
Environmental Technology Site
4-S23-ROI-03.02

REVISION 1

RADIOLOGICAL REQUIREMENTS FOR RADIOACTIVE MATERIAL TRANSFER AND UNRESTRICTED RELEASE

APPROVED BY: P. D. Worley / P. D. Worley 11/20/96
Manager, Radiological Operations — Print Name — Date

Responsible Organization: Radiological Operations Effective Date: 12/15/96

CONCURRENCE BY THE FOLLOWING DISCIPLINES IS DOCUMENTED IN THE PROCEDURE HISTORY FILE:

Radiological Control Program Support
Radiological Operations
Subject-matter Expert

USE CATEGORY 4

ORC review SORC-96-042 (11/19/96)

The following have been incorporated in this revision:
96-DMR-000682

Reviewed for Classification/UCNI (U/NU)
By Roger S. Cichon
Date November 20, 1996

This procedure supersedes 4-S23-ROI-03.02, Revision 0 dated 5/8/95.

Periodic review frequency: 4 years from the effective date

LIST OF EFFECTIVE PAGES

Pages	Effective Date	Pages	Effective Date
1-25	12/15/96		

The following DMRs are incorporated into this revision:

LIST OF EFFECTIVE PAGES

Pages	Effective Date	Pages	Effective Date
1	12/15/96		
2	08/01/97		
3-11	12/15/96		
12	02/27/97		
13-17	12/15/96		
18	08/01/97		
19-20	12/15/96		
21	08/01/97		
22-25	12/15/96		

The following DMRs are incorporated into this revision:

97-DMR-000918

97-DMR-000195

TABLE OF CONTENTS

1. PURPOSE

This procedure provides instructions for transferring Radioactive Material (RAM) to various locations on-site, including between radiological areas. This procedure also provides instructions for releasing material, equipment, etc. from all radiological controls. If such materials are provided with an unrestricted release in accordance with this procedure, no additional radiological controls are required for handling, storing or disposing of the material.

This procedure contains requirements of Title 10 Code of Federal Regulations Part 835 (10 CFR 835), Occupational Radiation Protection, and DOE/EH-0256T, U. S. Department of Energy Radiological Control Manual, and cannot be changed without approval of the Radiological Control Department.

2. SCOPE

This procedure provides Radiological Operations with the necessary guidance to ensure that both on-site radioactive material transfers and surveys conducted to release non-radiologically contaminated materials from radiological controls are conducted in accordance with applicable federal regulations, Department of Energy (DOE) orders, contractual obligations, and higher tiered Rocky Flats site documents.

This procedure does not provide all instructions for making off-site shipments of radioactive material; additional requirements for these shipments are contained in the On-Site Transportation Manual.

In addition, this procedure does <u>not</u> provide instructions for releasing the following types of materials for unrestricted use:

- Bulk or volume materials, such as granulated metals, chemicals, or soils
- Samples from areas with surface and/or airborne contamination
- Waste

These types of items are to be referred to Radiological Engineering (RE) for evaluation and determination of release requirements.

2. SCOPE (continued)

This procedure is a total rewrite and revision bars have been omitted. This revision supersedes 4-S23-ROI-03.02, Revision 0, and is designated Revision 1 because the scope of the procedure has changed.

3. OVERVIEW

Release of property and waste from Rocky Flats requires a radiological determination prior to movement to ensure that all laws and requirements are met. Certain radiological determinations have been made and denoted as streamlined requirements in Appendix 5, Streamlined Requirements for Transfer or Release of Property or Waste of 1-P73-HSP-18.10, Radioactive Material Transfer and Unrestricted Release of Property and Waste (for example, release of samples from non-radiological areas). This determination provides assurances that items released from Rocky Flats are within the radiological contamination release limits for disposal in the environment and use by the general public.

Where potentially contaminated surfaces are not accessible for measurement (as in some pipes, drains, and ductwork), such property may be released after case-by-case evaluation and documentation based on both the history of its use and available measurements demonstrate that the unsurveyable surfaces are likely to be within the applicable limits of 4-K62-ROI-03.01, Performance of Surface Contamination Surveys.

The radioactive material transfer process is detailed in Section 7.1, Radioactive Material Transfer. The process for Unrestricted Release is detailed in Section 7.2, Unrestricted Release, with the major steps being outlined in Appendix 1, Unrestricted Release Flowchart. This flowchart, along with Section 7.2, provides the RCT with the necessary information to properly evaluate, survey, and release property.

4. DEFINITIONS AND ACRONYMS

4.1 Definitions

ALARA (As Low As is Reasonably Achievable). The approach to radiation protection to manage and control exposures (both individual and collective) to the work force and to the general public to as low as is reasonable, taking into account social, technical, economic, practical, and public policy considerations.

Contamination. Deposition or presence of unwanted/undesirable radioactive material on the surfaces of structures, areas, objects, or personnel. Radioactive material (contamination) can also be contained within the matrix of a material such as liquids, soils, solids, or within activated materials. Property said to be contaminated equals or exceeds the limits of 4-K62-ROI-3.01. Waste designated as contaminated does not meet the requirements of the No Radioactivity Added (NRA) Waste Verification Program.

Controlled Area. Any area to which access is managed in order to protect individuals from exposure to radiation and/or radioactive material. Individuals who enter only the controlled area without entering radiological areas are not expected to receive a total effective dose equivalent of more than 100 mrem (0.001 sievert) in a year.

Detailed Survey. The minimum degree of survey to be performed on an item with a high probability of contacting DOE radioactive material in order for the item to meet the requirements of Unrestricted Release.

Direct Frisk. A technique used to measure the contamination levels of a surface by moving a probe across a surface at a specified rate of travel, keeping the probe at a constant distance from the surface being measured.

Material Transfer and Disposal Form (RF-47555) A form used for:

- On-site transfer of uncontaminated items
- Unrestricted release of property
- Unrestricted release of waste.

4.1 **Definitions (continued)**

Naturally Occurring Radioactive Material (NORM). Any nuclide that is radioactive in its natural physical state and is not man made.

No-Radioactivity-Added (NRA) Waste Verification Program. The release criteria established by the DOE Performance Objective for the Certification of Nonradioactive Hazardous Waste. The performance objective states wastes may not be released from the site for processing by a Treatment, Storage, and Disposal (TSD) facility unless it can be proven by process knowledge or history, sampling and analysis, or direct survey methods, that no DOE controlled radioactive material has been added to the waste.

Off-site. For radiological control purposes, the following buildings or areas are characterized as off-site:

- Destinations outside of Rocky Flats which is bounded by Colorado Highway 93, Colorado Highway 128, Colorado Highway 72, and Indiana Avenue
- Building 130, General Warehouse, and Buildings 060, 061, 250, and 552
- Rocky Flats Landfill
- Regulated Waste Operations facilities designated for storage of nonradioactive waste destined for off-site shipment

PAT Technique. A contamination survey technique in which the detector probe is held stationary over a surface for a measured period of time. Typically one minute PATs are performed.

Personal Property. Personally owned or controlled material, including, but not limited to, miscellaneous hand-carried materials such as, pens, notebooks, watches, pagers, briefcases, lunch boxes, and eyeglasses.

Property. All items, materials, instrumentation, and equipment which are government, company or subcontractor owned, leased or operated, and are used or have been used within the Rocky Flats boundary.

Property Release Evaluation (PRE). An evaluation performed by RE on property that cannot be monitored using standard survey techniques.

4.1 **Definitions (continued)**

Radioactive Material Management Area (RMMA). An RMMA is an area in which the potential exists for contamination due to the presence of unencapsulated or unconfined radioactive material, or beams of radiation that could cause activation of waste. RMMAs are buildings, rooms, facilities, or areas where waste and property is controlled as radioactive until proven otherwise. RMMAs are classified by Radiological Engineering in accordance with 4-N83-REP-1108, Radioactive Material Management Area (RMMA) Determination.

Radioactive Material Transfer. Administratively controlled transfer of radioactive or potentially radioactive material.

Radioactive Material Transfer Tag (RFP-5822.03). A tag that specifies the radiological requirements for the transfer of radioactive or potentially radioactive material.

Radiological Buffer Area (RBA). An intermediate area established to prevent the spread of radioactive contamination and/or to protect personnel from radiation exposure.

Radiological Area. Any area within a controlled area which must be posted as a "radiation area," "high radiation area," "contamination area," "high contamination area" or "airborne radioactivity area" in accordance with 10 CFR 835, §835.603.

Radiological Engineering (RE). Includes personnel from Radiological Engineering, Radiological Building Engineers, and other Radiological Control staff qualified to perform P/WREs.

Representative Survey. The minimum degree of survey to be performed on an item with a low probability of contacting DOE radioactive material in order for the item to meet the requirements of Unrestricted Release.

Swipe. A survey performed on a surface to provide a quantitative measurement of the removable contamination present.

4.1 Definitions (continued)

Unrestricted Release. Release of property/waste from anywhere within the Rocky Flats boundaries without restriction or controls on future movement, disposal, or use in accordance with the guidelines or requirements of 10 CFR 835, DOE Order 5400.5, Radiation Protection of the Public and the Environment, or the NRA Waste Verification Program.

Waste. Any material that meets the definition of a "solid waste" in accordance with Title 40 Code of Federal Regulations Part 261 (40 CFR 261), Identification and Listing of Hazardous Waste, or any material (regulated or unregulated) that is destined for Regulated Waste Operations for recycle/reclamation, a landfill, or off-site disposal/treatment. Regulated Waste Operations is responsible for determination of a wastes.

Waste Release Evaluation (WRE). An evaluation performed by RE for the unrestricted release of wastes from Rocky Flats in accordance with the No Radioactivity Added Waste Verification Program.

4.2 Acronyms

DOE	Department of Energy
HSP	Health & Safety Practice
PU&D	Property Utilization & Disposal
PRL	Property Release Log
RAM	Radioactive Material
P/WRE	Property/Waste Release Evaluation
RBA	Radiological Buffer Area
RCM	Radiological Control Manual
RCT	Radiological Control Technician
RE	Radiological Engineering
Rocky Flats	Rocky Flats Environmental Technology Site
RMMA	Radioactive Material Management Area
RO	Radiological Operations
RWP	Radiological Work Permit

5. RESPONSIBILITIES

5.1 Radiological Control Technician (RCT)

Performs surveys, as applicable, in accordance with 4-K62-ROI-03.01 and 4-S04-ROI-01.01, Radiation Surveys.

Performs an initial assessment of the property to be released.

Documents and completes the following forms described in this procedure, as appropriate :

- Appendix 2, Radioactive Material (RAM) Tag/Label (RFP-5820.27)
- Appendix 3, Radioactive Material Transfer Tag (RFP-5822.03)
- Appendix 4, Material Transfer and Disposal Form (RF-47555)
- Appendix 5, Property Release Log

5.2 Radiological Operations (RO) Supervision

Ensure that only personnel trained in the use of this procedure are allowed to perform activities described in this procedure.

Ensure that records and logs are maintained in accordance with applicable federal regulations, Department of Energy (DOE) orders, and the appropriate site documents.

6. REQUIREMENTS

6.1 Samples

Samples to be shipped off-site, other than those exempted in Appendix 5 of 1-P73-HSP-18.10, are to be referred to RE for determination of release requirements.

6.2 Records

The records of released property shall include:

- A description or identification of the property
- The date of the last contamination survey (if known or performed)
- The identity of the organization and the individual who performed the monitoring operation
- The type and identification number of monitoring instruments
- The results of the monitoring operation
- The identity of the recipient of the released material

6.3 Material

Material not immediately removed from Contamination or Airborne Radioactivity Areas after survey shall be controlled to prevent recontamination while awaiting release. Control is defined as no significant change in radiological conditions in the subject area since the surveys were performed.

7. INSTRUCTIONS

Surveys are to be performed at the discretion of the RCT [unless directed by a Property/Waste Release Evaluation (P/WRE)], based on the process knowledge/history given, to determine whether the item(s) being surveyed meet the release requirements. Once property/waste has been released for unrestricted use, whether by process knowledge/history, radiological surveys, or P/WRE, then the property/waste has no further radiological concerns unless it reenters a Contamination Area, High Contamination Area, Airborne Radioactive Area, Soil Contamination Area, or Radioactive Material Management Area (RMMA).

7.1 Radioactive Material Transfer

This process is used to authorize the movement of contaminated and potentially contaminated items on-site at Rocky Flats, while maintaining radiological controls on the items to prevent the spread of contamination. Items transferred using this process that have removable surface contamination levels greater than or equal to the applicable limits of 4-K62-ROI-3.01 are to be packaged in accordance with the RFETS Radiological Control Manual (Site RCM), and meet the posting and labeling requirements of 4-N95-ROI-01.03, Radiological Control Posting and Labeling.

A Radioactive Material Transfer Tag (RFP-5822.03) and/or Radioactive Material (RAM) Tag/Label (RFP-5820.27) is used to document the information necessary to properly transfer radioactive material from one location to another, on-site. The information to be recorded is dependent on the material being transferred. The old Radioactive Material Tags/Labels (RF# 46751), that are currently installed, shall remain valid until the presently documented surveys expire.

Material being transferred internally [remaining inside a building or enclosure(s)] does not require a Radioactive Material Transfer Tag (RFP-5822.03), provided that a completed RAM Tag/Label (RFP-5820.27) is attached and the removable contamination levels are within the limits in Appendix 1 of 4-K62-ROI-3.01.

7.1 **Radioactive Material Transfer (continued)**

Additional contamination and/or radiation surveys will not be required for on-site transfers if ALL of the following conditions are met:

- Radioactive containers/packages whose contents have a specific activity ≤ 100 nanoCuries/gram (maximum level of activity for low level waste as defined in Title 49 Code of Federal Regulations Part 173, Shippers - General Requirements for Shipments and Packaging, Subpart I).
- The container has a properly completed RAM Label/Tag on it.
- The container has not entered a Contamination Area (CA), High Contamination Area (HCA), or Airborne Radioactivity Area (ARA).
- The container has not been opened (breached or punctured) since performance of the survey documented on the RAM Tag/Label.

Material should be moved within 24 hours of the performance of surveys, if possible.

Radiation survey data documented on RAM Labels/Tags is valid for a period of up to two years from the date performed. [RE Technical Basis Document (TBD) #00059, Radiological Survey Life Cycle for Waste Drum]

Properly labeled containers are exempt from Step 7.1[1].

NOTE A neutron dose rate survey is NOT required, and zero (0) should be entered for the neutron dose rate when the gamma dose rate survey on contact is < 1 mrem/hr, or if the specific activity of the material is < 2 nCi/g.

RCT

[1] Perform the following surveys, as applicable, in accordance with 4-K62-ROI-03.01 and 4-S04-ROI-1.01:

- Alpha removable surveys on the item(s) to determine the representative levels of contamination
- Beta/gamma removable surveys on the item(s) to determine the representative levels of contamination

7.1 Radioactive Material Transfer (continued)

- Gamma dose rate surveys of the item(s) on contact, at thirty (30) cm, and at 1 meter (also at 3 meters for Surface Contaminated Objects only)
- Neutron dose rate surveys of the item(s) on contact, at thirty (30) cm, and at 1 meter (also at 3 meters for Surface Contaminated Objects only)

[2] Record the information on Appendix 2, RAM Tag/Label (RFP-5820.27).

[3] **IF** surveys demonstrate exterior surfaces of the item/packaging to be less than the appropriate removable surface contamination limits in 4-K62-ROI-3.01,
THEN complete Appendix 3, Radioactive Material Transfer Tag as appropriate, at the time of the actual transfer, and sign where indicated authorizing the transfer.

[4] **IF** the surveys demonstrate that the item/packaging exterior surfaces are equal to or greater than the applicable removable limits specified in 4-K62-ROI-3.01,
THEN:

[A] Contain the item in accordance with the Site RCM, Article 413, which requires wrapping the material in plastic (preferably yellow) or placing in a container.

[B] Complete the Radioactive Material Transfer Tag as appropriate, and sign where indicated authorizing the transfer.

[C] Transfer items outside buildings in accordance with applicable requirements in the On-Site Transportation Manual.

7.2 Unrestricted Release

RCT

[1] Obtain the process knowledge/history from the Sender/Custodian and perform an initial assessment of the property to be released.

[2] Request additional clarifying information about the item(s) to ensure sufficient history is established to make a valid evaluation, such as:

- Whether the item was used or stored in a Radioactive Material Management Area (RMMA), which is defined as an area containing unconfined or unencapsulated DOE radioactive material
- The design function of the item (does it handle radioactive materials?)
- Radionuclides that were involved
- Whether the item was involved with gases, chemicals, acids, and/or liquids

[3] Verify that the item identified on Appendix 4, Material Transfer and Disposal Form (RF-47555), is the item to be evaluated.

[4] Evaluate all available information and determine the survey requirements:

[A] **IF** an evaluation of No Surveys Required (NSR) is justified by documentation of the process knowledge/history,
AND verified by the signature of the sender/custodian,
THEN check (✓) No Survey Required on the PRL and go to Step 7.2[5].

[B] **IF** the property has a low probability of contacting unencapsulated or unconfined DOE radioactive materials,
THEN perform a REPRESENTATIVE survey in accordance with 4-K62-ROI-03.01.

[C] **IF** the property has a high probability of contacting unencapsulated or unconfined DOE radioactive materials,
THEN perform a DETAILED survey in accordance with 4-K62-ROI-03.01.

7.2 **Unrestricted Release (continued)**

[5] **IF** survey results are within the Unrestricted Release limits of 4-K62-ROI-03.01,
OR the property has been evaluated as NSR,
THEN:

[A] Complete the appropriate sections of Appendix 4 (if applicable).

[B] Complete Appendix 5, Property Release Log (PRL) in accordance with Section 7.3, Documentation of Evaluations and Surveys for Unrestricted Release.

[C] Remove or deface any radioactive labeling on the item.

[D] Sign the form to authorize the release.

[6] **IF** survey results are greater than or equal to the limits of 4-K62-ROI-03.01,
THEN:

[A] Instruct the sender/custodian to contact RE for further guidance if an unrestricted release is still desired.

[B] Package and label the item(s) in accordance with the Site RCM.

[C] Post the item(s) and/or area in accordance with 4-N95-ROI-01.03.

7.3 **Documentation of Evaluations and Surveys for Unrestricted Release**

All items evaluated or surveyed for Unrestricted Release are to be documented in Appendix 5, Property Release Log.

RCT

[1] Assign the PRL # and DATE to each item evaluated/surveyed for release, using the following guidelines:

7.3 **Documentation of Evaluations and Surveys for Unrestricted Release** (continued)

- The PRL # is a number sequentially assigned by building/area and year.
- The first group of digits denotes the building/area from which the property/waste is being released.
- The second group of digits denotes the year of the survey.
- The last group of digits is the sequential number by item.
- Each number group is separated by a dash (-).

Example: The PRL number for the tenth (10th) item surveyed in the year 1995 from Building 750 would be recorded as 750-95-10.

NOTE *An entry should be made in Appendix 5 for each item or group of items that is evaluated/ surveyed for release in accordance with Steps [2] through [5] (groups of items may be entered as a single line entry if items have the same process knowledge/history and destination).*

[2] Request the sender to complete the following on Appendix 5:
- Item Description/ID #'s
- Been in a CA/RBA
- History
- Sender Signature
- Employee #
- Recipient

[3] Check (✓) either Survey Performed or No Survey Required for the item(s) in the SURVEY REQUIREMENT box.

[4] Check (✓) either Within Limits or Limits Exceeded in the MEET RELEASE CRITERIA box.

[5] Complete the RCT INFORMATION block with the following:
- Print Name
- Emp. No.
- Signature

8. RECORDS

The following Quality Assurance Records are generated by this procedure:

- ~~Appendix 2, Radioactive Material (RAM) Tag/Label (RFP-5820.27)~~
- ~~Appendix 3, Radioactive Material Transfer Tag (RFP-5822.03)~~
- ~~Appendix 4, Material Transfer and Disposal Form (RF-47555)~~
- Appendix 5, Property Release Log

97-DMR-000918

RO Supervision

[1] Maintain records and logbooks in accordance with 1-V41-RM-001, Records Management Guidance for Records Sources, and 3-I27-RP-2001, Guidance for Management of Records in Radiological Control.

9. REFERENCES

DOE/EH-0256T, U. S. Department of Energy Radiological Control Manual

DOE Order 5400.5, Radiation Protection of the Public and the Environment

On-Site Transportation Manual

Radiological Engineering Technical Basis Document #00059, Radiological Survey Life Cycle for Waste Drums

Rocky Flats Environmental Technology Site Radiological Control Manual

Title 10 Code of Federal Regulations Part 835, Occupational Radiation Protection

Title 40 Code of Federal Regulations Part 261, Identification and Listing of Hazardous Waste

Title 49 Code of Federal Regulations Part 173, Shippers - General Requirements for Shipments and Packaging

1-P73-HSP-18.10, Radioactive Material Transfer and Unrestricted Release of Property and Waste

1-V41-RM-001, Records Management Guidance for Record Sources

3-I27-RP-2001, Radiation Protection Records Management

4-K62-ROI-03.01, Performance of Surface Contamination Surveys

4-N83-REP-1108, Radioactive Material Management Area (RMMA) Determination

4-N95-ROI-01.03, Radiological Control Posting and Labeling

APPENDIX 1

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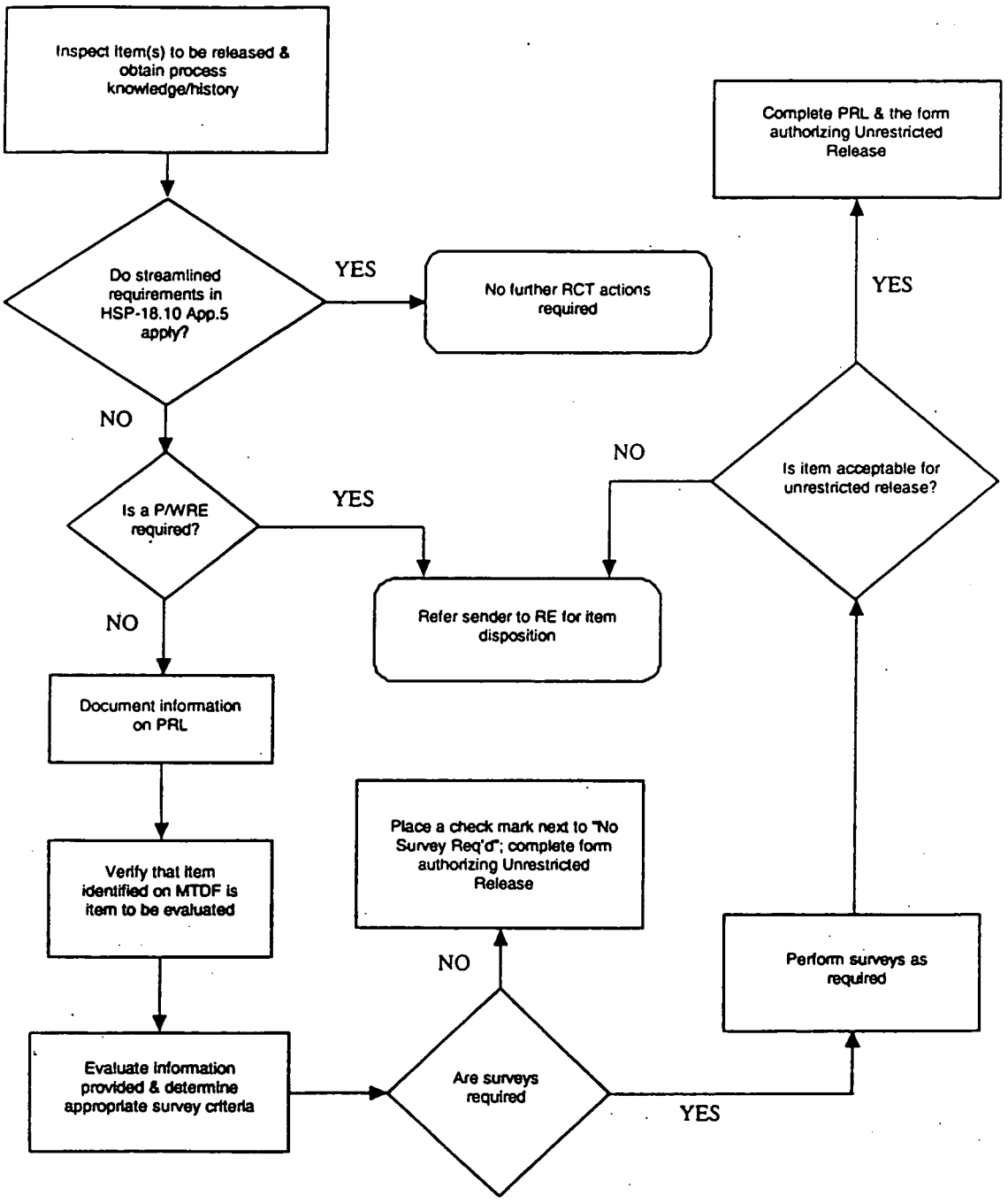
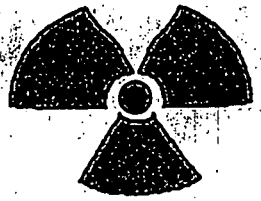
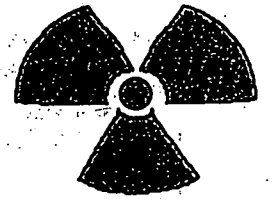
UNRESTRICTED RELEASE FLOWCHART



RFPF 5820.27 6/97



CAUTION
RADIOACTIVE MATERIAL



TYPICAL

DESCRIPTION _____

Isotopes of Concern: _____

Packaged By: _____ Employee # _____

Date Packaged: _____

CONTAMINATION DATA

SURFACE CONTAMINATION ON CONTENTS

Alpha (Removable) _____ dpm/100cm²

Alpha (Fixed) _____ dpm/100cm²

SURFACE CONTAMINATION ON PACKAGE EXTERIOR

Alpha (Removable) _____ dpm/100cm²

Alpha (Fixed) _____ dpm/100cm²

COMMENTS:

_____

_____

_____

_____

PACKAGE RADIATION DATA

PACKAGE EXTERIOR SURFACE READINGS

Total Gamma/Neutron on contact: _____

Total Gamma/ Neutron at 30cm: _____

_____ _____ _____

RADIOLOGICAL CONTROL SIGNATURE EMPLOYEE # DATE

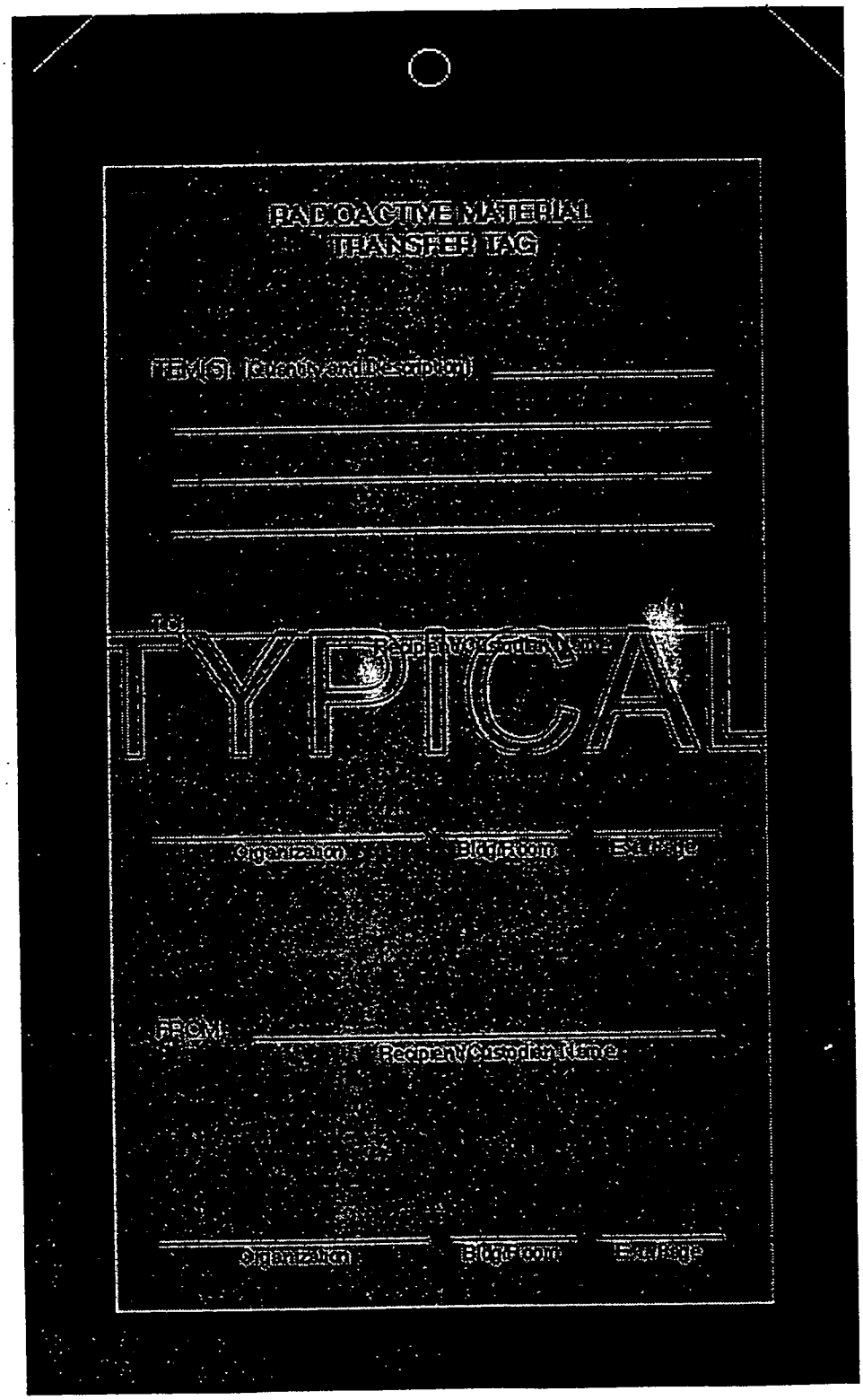
-ON-SITE USE ONLY-

RADIOACTIVE MATERIAL (RAM) TAG/LABEL (RFP-5820.27)

APPENDIX 2

APPENDIX 3
Page 1 of 2

RADIOACTIVE MATERIAL TRANSFER TAG (RFP-5822.03)



APPENDIX 3
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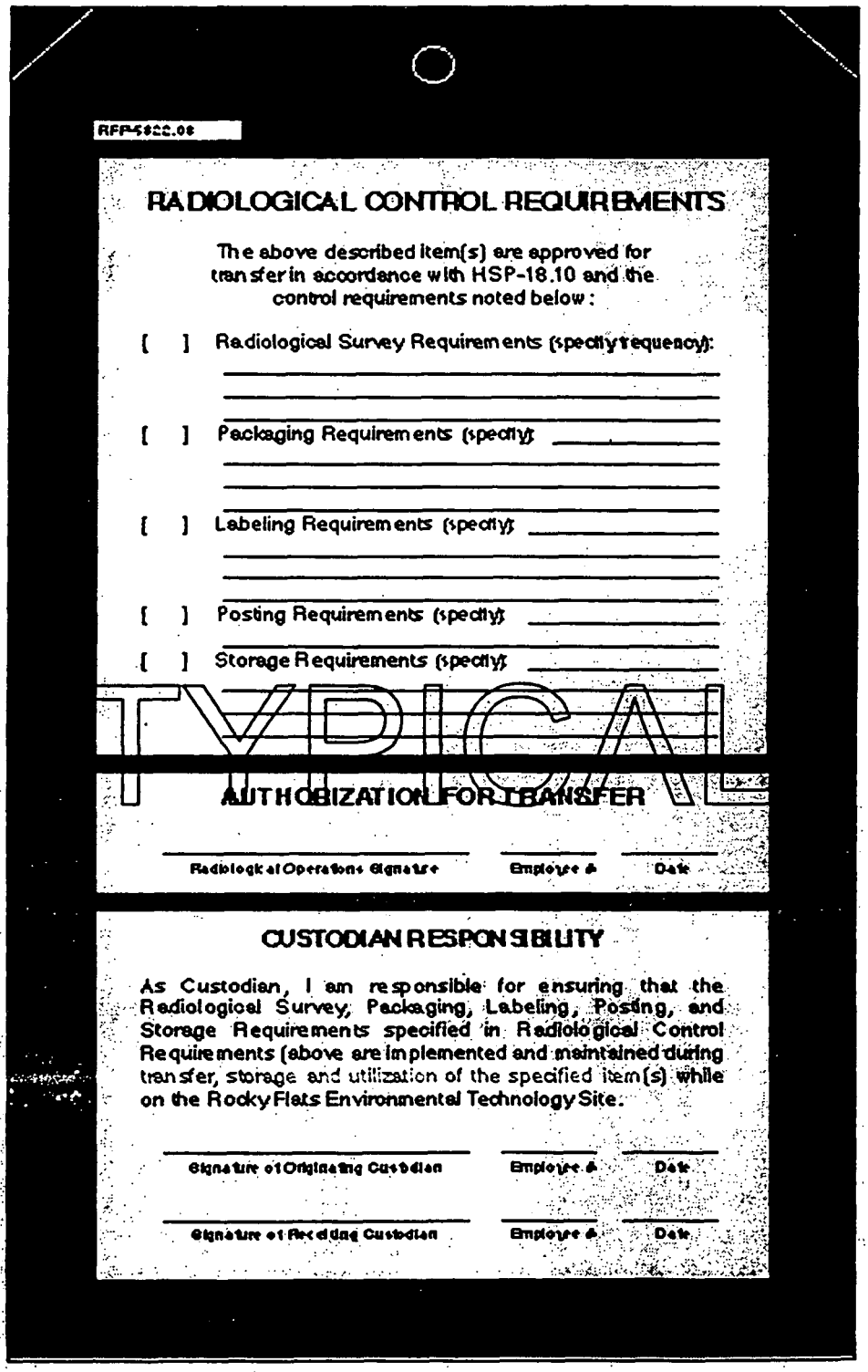

RFP-5822.08

RADIOLOGICAL CONTROL REQUIREMENTS

The above described item(s) are approved for transfer in accordance with HSP-18.10 and the control requirements noted below:

[ ] Radiological Survey Requirements (specify frequency):

[ ] Packaging Requirements (specify)

[ ] Labeling Requirements (specify)

[ ] Posting Requirements (specify)

[ ] Storage Requirements (specify)

TYPICAL

AUTHORIZATION FOR TRANSFER

Radiological Operations Signature | Employee # | Date

CUSTODIAN RESPONSIBILITY

As Custodian, I am responsible for ensuring that the Radiological Survey, Packaging, Labeling, Posting, and Storage Requirements specified in Radiological Control Requirements (above are implemented and maintained during transfer, storage and utilization of the specified item(s) while on the Rocky Flats Environmental Technology Site.

Signature of Originating Custodian | Employee # | Date

Signature of Receiving Custodian | Employee # | Date

MATERIAL TRANSFER AND DISPOSAL

1)	2) QTY	3) UNIT OF MEASURE	4) ITEM(S) DESCRIPTION	5) PROPERTY CONTROL NUMBER (BAR CODE #)
				6) SERIAL NUMBER

7) MANUFACTURER	8) MODEL	9) CONDITION CODE:

TO

10) NAME: PHONE #: PAGER #:	DATE:	RESPONSIBILITY CODE:
RECEIVED BY: EMPLOYEE #:		BUILDING #: ROOM #:

POSSESSOR

11) PROPERTY CUSTODIAN SIGNATURE: EMPLOYEE #:	EMPLOYER DOE___ KH ___ WSI ___ MSC ___ OTHER (SPECIFY)_____
12) DRIVER: DATE: NAME: EMPLOYEE #:	TEMPORARY COSINGEE: DATE: NAME: EMPLOYEE #:
PROPERTY CUSTODIAN SIGNATURE: EMPLOYEE #:	DATE: RESPONSIBILITY CODE:

13) SENDER: (Print Name) _____ EMPLOYEE #: _____

ONSITE PROPERTY/WASTE TRANSFER BULDING/ROOM _____

I certify the above described item(s) are being transferred in accordance with the Onsite Transfer Section of HSP 18.10

SIGNATURE: EMPLOYEE #: DATE:

RELEASE

14) UNRESTRICTED PROPERTY RELEASE APPROVAL

The above described item(s) have been evaluated and/or radiologically surveyed in accordance with ROI 3.02 and is approved for unrestricted release. Property/Waste Release log # _____

RADIOLOGICAL OPERATIONS SIGNATURE _____ EMPLOYEE #: _____ DATE: _____

UNRESTRICTED PROPERTY/WASTE RELEASE APPROVAL

The above described item(s) have been evaluated and/or radiologically surveyed in accordance with REP 1003 and is approved for unrestricted release. PRE # _____

RADIOLOGICAL ENGINEER SIGNATURE _____ EMPLOYEE #: _____ DATE: _____

RESPONSIBILITY

15) The sensitive property identified above is provided by the Federal Government for official purposes only.

Any individual who is assigned an item of Sensitive Property is both responsible and personally accountable for the item. "Responsible" means to provide reasonable safeguards against unauthorized use, loss, damage, destruction, or theft. "Accountable" means that the responsible employee shall be obligated to verify the physical location of the item of property or explain where the property is located at any point in time.

A Rocky Flats employee who accepts responsibility for Sensitive Property by signing the reciept shall report, within 24 hours of discovery, any instances of suspected or actual misuse, loss, damage, destruction, or theft of this property to their immediate supervisor, in accordance with Plant Policy 8-41. Employee by signing this receipt acknowledges that they have received a copy of policy 8-41.

I have read the text above and understand my responsibility for the physical control and accountability for Rocky Flats Sensitive Property and agree that each item assigned to my custody will be returned to the property custodian when a continued need for the property no longer exists (i.e. termination, change in job assignment, etc.)

USER SIGNATURE: SS/EMPLOYEE # DATE:

16) TRANSFER/PROPERTY ACTION

___ ON SITE TRANSFER
___ EXCESS DECLARATION
___ OFF SITE SHIPMENT
___ CHANGE OF LOCATION
___ PU&D STORAGE
___ RETURN FROM STORAGE
___ LANDFILL
___ SIZE REDUCTION
___ LOAN
___ RETURN OF LOAN
___ MAINTENANCE/REPAIR
___ CALIBRATION

17) LANDFILL AUTHORIZATION #: _____
EMPLOYEE #:
SIGNATURE:

18) PU&D ACCEPTANCE NUMBER

19) TRANSPORTATION SERVICE NUMBER:

20) (RMSA) RECORDS MANAGEMENT STORAGE AREA
CONTROL NUMBER: _____

21) REMARKS/JUSTIFICATION

22) MATERIAL HANDLING INFORMATION

DOT Hazardous Material Yes ___ No ___
If yes, proper shipping name _____
UN # _____
Precautions related to transporting this item(s) described
None Yes (if yes describe below) Fragile, Etc.

DISTRIBUTION — WHITE - PROPERTY MANAGEMENT — GREEN - RECEIVER — PINK - TRANSPORTATION — GOLDENROD - ORIGINATOR — HARD COPY - ATTACHED TO MATERIAL

MATERIAL TRANSFER AND DISPOSAL FORM (RF-47555)

APPENDIX 5

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PROPERTY RELEASE LOG

TYPICAL

PRL #:	✓ SURVEY REQUIREMENT	RCT INFORMATION
DATE: TIME:	___Survey Performed ___No Survey Req.	Print Name:
Item Description/ID #'s:		Emp. No.:
		Signature:
Been in a CA/RBA ___YES ___ NO	Sender Signature:	✓ Meet Release Criteria
History:		___ WITHIN LIMITS
	Emp.#:	___ LIMITS EXCEEDED
RECIPIENT:	RWP #:	

PRL #:	✓ SURVEY REQUIREMENT	RCT INFORMATION
DATE: TIME:	___Survey Performed ___No Survey Req.	Print Name:
Item Description/ID #'s:		Emp. No.:
		Signature:
Been in a CA/RBA ___YES ___ NO	Sender Signature:	✓ Meet Release Criteria
History:		___ WITHIN LIMITS
	Emp.#:	___ LIMITS EXCEEDED
RECIPIENT:	RWP #:	

PRL #:	✓ SURVEY REQUIREMENT	RCT INFORMATION
DATE: TIME:	___Survey Performed ___No Survey Req.	Print Name:
Item Description/ID #'s:		Emp. No.:
		Signature:
Been in a CA/RBA ___YES ___ NO	Sender Signature:	✓ Meet Release Criteria
History:		___ WITHIN LIMITS
	Emp.#:	___ LIMITS EXCEEDED
RECIPIENT:	RWP #:	

PRL #:	✓ SURVEY REQUIREMENT	RCT INFORMATION
DATE: TIME:	___Survey Performed ___No Survey Req.	Print Name:
Item Description/ID #'s:		Emp. No.:
		Signature:
Been in a CA/RBA ___YES ___ NO	Sender Signature:	✓ Meet Release Criteria
History:		___ WITHIN LIMITS
	Emp.#:	___ LIMITS EXCEEDED
RECIPIENT:	RWP #:	

APPENDIX 3
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Page 1 of 1 **DOCUMENT MODIFICATION REQUEST (DMR)** — 25. DMR No. 97-DMR-000918

Originator

1. Name/Phone/Pager/Location: R. Mark Richards/5148/5886/T130B
2. Date: 7/28/97
3. Existing Document Number and Revision: 4-S23-ROI-03.02, Revision 1
4. Document Type: ☐ Policy ☐ Manual ☐ Directive ☑ Procedure ☐ Instruction ☐ Job Aid ☐ Other _____
5. Document Title: Radiological Requirements for Radioactive Material Transfer and Unrestricted Release

6. Item	7. Page	8. Step	9. Proposed Modification
1	18	8.	Delete Appendices 2, 3 and 4 from this procedure as a Qualtiy Assurance Record (QAR).
2	21	Appendix 2	Modify Ram Tag/Label (RFP-5820.27) to meet the newly revised RFP-5820.27 labels being implemented.

10. Item	10a. Justification (Reason for Modification, EJO#, TP#, etc.)
1	The Radioactive Material (RAM) Tag/Label (RFP 5820.27), Radioactive Material Transfer Tag (RFP-5822.03) and Material Transfer and Disposal Form (RF-47555) are used by various Site organizations to provide guidance concerning the radiological condition of a waste, property or material however, these forms do not require retention as a Radiological Safety QAR.
2	The RAM Tag/label was revised to reflect only those items necessary to be on the form (RFP-5820.27). Therefore, the Caution Radioactive Material label/tag depicted in the procedure will be the same being implemented on-site.

11. ☑ Process (Complete Blocks 13-22) ☐ Do not Process (state reason in Block 10a) P. D. Worley / (print/sign/date) P. D. Worley / 7/28/97

12. Assigned SME/Phone/Pager/Location: R. Mark Richards/5148/5886/T130B

13. New Document/Rev. No. (if new or changed): N/A

Complete either Section 14a or 14b, as applicable

14a. Type of Complete Modification: ☐ New ☐ Revision ☐ Cancellation ☐ One-Time-Use

14b. Changes: (check the applicable boxes) ☐ Intent Change ☑ Nonintent Change ☐ Regular ☐ Editorial Correction ☑ Interim Approval Request - Needed for Immediate use (30-day limit for obtaining final approval)

Additional Attributes: ☐ Temporary ☐ One-Time-Use ☐ Limited Distribution

15. ERM Change Control Board Required: ☐ Yes ☐ No (Applicable only to new procedures, revisions, and intent changes)

List the reviewing organization in Block 16. After concurrence has been obtained on the Comment Sheet, enter the name of the reviewer followed by /s/ in block 17. If the reviewer indicated No comments, the review signature constitutes concurrence. Enter the date concurrence is obtained in Block 18.

16. Reviewing Org.	17. Name of Reviewer for that Organization	18. Date	16. Reviewing Org.	17. Name of Reviewer for that Organization	18. Date
SME/STE	R.M. RICHARDS	7/28/97			
Rad Eng.	(SAME AS ABOVE)				
RadSec 371	/S/ J. Vogel	7/31/97			
RadSec Dyn/RM	/S/ P.L. Hapke	7/29/97			
RadSec 559/707	/S/ D. Davidson	7/30/97			
RadSec 776/777	/S/ G. T. Chandler	7/30/97			
RadSec 771/774	/S/ K. Harrawood	7/30/97			

19. Prescreen/SES/USQD Number: not required.

20. Independent Safety Review Meeting and Date: not required.

21. ☐ Process Policy Action (This block required for Policies only) ☐ Do not Process (state reason in Block 10a)
Reviewed by V.P. w/ responsibility for the Policy Program (print/sign/date)

22. Approval Authority signs after obtaining ALL required signatures (print/sign/date) P. D. Worley / P. D. Worley / 8/1/97

23. Effective Date 08/01/97

24. Expiration Date

APPENDIX 3
Page 1 of 3

Page 1 of 1 **DOCUMENT MODIFICATION REQUEST (DMR)**

Originator — *Print or Type all information (except signatures)*

25. DMR No. 97-DMR-000195

1. Name/Phone/Pager/Location: R. S. Tyson / 8172 / /T690B
2. Date: 2/27/97
3. Existing Document Number and Revision: 4-S23-ROI-03.02 / Rev. 1
4. Document Type: ☐ Policy ☐ Manual ☐ Directive ☑ Procedure ☐ Instruction ☐ Job Aid ☐ Other _____
5. Document Title: Radiological Requirements for Radioactive Material Transfer and Unrestricted Release

6. Item	7. Page	8. Step	9. Proposed Modification
1	2	LOEP	Modify List of Effective Pages (LOEP) to match attached affected pages.
2	12	7.1	Insert the following text to the end of the second paragraph: "The old Radioactive Material tags/labels (RF# 46751), that are currently installed, shall remain valid until the presently documented surveys expire."

10. Item — 10a. Justification (Reason for Modification, EJO#, TP#, etc.)

1- LOEP changes are documented per Site Documents Requirements Manual.

2- Changing labels/tag is unnecessary duplication of work and wasted resources, and should only be done when the surveys are no longer valid, the label/tags have been defaced or no longer readable, or the labels/tags have insufficient information to identify the material, etc. Therefore, the old Radioactive Material tags/labels RF#46751 are still valid as long as the surveys are still valid.

Responsible Manager

11. ☑ Process (Complete Blocks 13-22) ☐ Do not Process (state reason in Block 10a) P. D. Worley / P. D. Worley (print/sign/date) 2/27/97

12. Assigned SME/Phone/Pager/Location: R. S. Tyson / 8172 / / T690B

13. New Document/Rev. No. (if new or changed): N/A

Complete either Section 14a or 14b, as applicable

14a. Type of Complete Modification: ☐ New ☐ Revision ☐ Cancellation ☐ One-Time-Use

14b. Changes: (check the applicable boxes) ☐ Intent Change ☑ Nonintent Change ☑ Regular ☐ Editorial Correction ☐ Interim Approval Request - Needed for Immediate use (30-day limit for obtaining final approval)

Additional Attributes: ☐ Temporary ☐ One-Time-Use ☐ Limited Distribution

15. ERM Change Control Board Required: ☐ Yes ☐ No (Applicable only to new procedures, revisions, and intent changes)

List the reviewing organization in Block 16. After concurrence has been obtained on the Comment Sheet, enter the name of the reviewer followed by /s/ in block 17. If the reviewer indicated No comments, the review signature constitutes concurrence. Enter the date concurrence is obtained in Block 18.

16. Reviewing Org.	17. Name of Reviewer for that Organization	18. Date	16. Reviewing Org.	17. Name of Reviewer for that Organization	18. Date
SME	P. D. Worley	2/27/97			
Rad Eng	P. D. Worley	2/27/97			
Rad Trng.	for T. C. Smith	2/28/97			

19. Prescreen/SES/USQD Number: Not Required

20. Independent Safety Review Meeting and Date: Not required.

VP of H&S

21. ☐ Process Policy Action (This block required for Policies only) ☐ Do not Process (state reason in Block 10a)

Reviewed by V.P. of Health & Safety (print/sign/date)

22. Approval Authority signs after obtaining ALL required signatures (print/sign/date)

P. D. Worley / P. D. Worley / 2/27/97

23. Effective Date: 2/27/97

24. Expiration Date

REVIEWED FOR CLASSIFICATION By R. S. Cichorz (U) NM 2/27/97